CONSUMERS' RESEARCH

Bulletin

April 1949

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CONSUMERS' RESEARCH

Vol. 23 • No. 4 **BULLETIN** April 1949

Off the Editor's Chest

IT WAS quite a shock to some people back in May 1931 when CR advised that changing oil in an automobile at every 2000 to 3000 miles was perfectly satisfactory, unless conditions were exceptional (as, for example, where foreign matter was introduced into the oil when a car traveled for a considerable distance over dusty roads). Subscribers wrote us in doubt and apprehension, pointing out that our advice on this point was in conflict with that given in their car manuals, which advised changing oil at as short an interval as 500 miles, in some cases, in order to avoid risk of injury to the motor.

Gradually this radical, money-saving advice came to be accepted not only by CR subscribers — who after their first surprise showed confidence in the findings of CR's experts — but by the automobile manufacturers themselves and such conservative bodies as the American Automobile Association. The fact that owners of "fleets" of cars had found it good policy not to change the oil of cars, maintained under engineering supervision, at all gave added weight to CR's findings. Then in February 1938, the American Automobile Association published the conclusion that: "The one point all [manufacturers of motor cars] seem to be agreed on is that it is not necessary today to change oil at 500 miles. However, when it comes to recommending a specific period, even engineers of the industry are not in agreement. A common figure is 1,000 miles. On the other hand, some of the best informed men in the business run far more than that without doing anything other than renewing oil, as it is consumed by operation."

CR's earlier brief comment on lubricating oil was eventually expanded into a 16-page consumers' study of gasolines and oils, issued in August 1937, which — with some later additions and modifications to bring it up to date — is still valid and still available (at 15c — advt.). Indeed, CR's advice that changing oil at periods of less than 2000 miles is an unnecessary expense in most instances has proved to be sound and may even be too conservative. In November 1944, a publication of the Society of Automotive Engineers commented: "Oil drainage periods in most fleets vary between 1000 miles and 6000 miles. The higher figure is safe where maintenance is good, oil is of high quality, filters are used, and sustained operations are the rule. The lower figure should be used when engine wear is high, when there is some question of adequate lubrication, or in cases of intermittent or door-to-door operation. A general average for small or scattered fleets is 2000 miles between oil drains."

Even one or two oil refiners, quick to pick up something which would appear to differentiate their oils from oil of other producers, began to advertise their automobile oils as good for 2000 miles. (Such advertising was misleading in effect, because there was nothing about the particular

(Continued on page 25)

Scientific and Technical Experts and Editors: F. J. Schlink, R. Joyce, M. C. Phillips, A. R. Greenleaf, Charles L. Bernier, and Dwight C. Aten. Editorial Assistants: Mary F. Roberts and B. Beam.

Symbols used to indicate sources of data and bases of ratings: **A**—recommended on basis of quality; **AA**—regarded as worthy of highest recommendation; **B**—intermediate with respect to quality; **C**—not recommended on basis of quality; **cr**—information from Consumers' Research's own tests or investigations; **1, 2, 3**—relative prices, **1** being low, **3** high. Note that price and quality are completely differentiated in CR's listings; **a quality judgment is independent of price**; **48, 49**—year in which test was made or information obtained or organized by the staff of Consumers' Research.

It will be advantageous if you will, whenever possible, send prompt notice of change of address at least 5 weeks before it is to take effect, accompanying your notice with statement of your old address with name in full. At least a month's notice must be given in any case. This rule, however, regarding long advance notice does not apply to military personnel.

¶*CR will, of course, gladly change addresses for men and women in the services as often as required by changes in station and other circumstances.*

★★★For a brief cumulative index of 1949 BULLETINS preceding this issue, see page 28.

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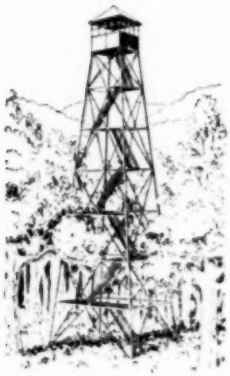
CORRECTIONS TO CONSUMERS' RESEARCH BULLETIN OF

APRIL 1949

Amplifiers p. 7	Electronic Sound Engineering Co. is no longer the sales representative for the Universal UB-15 Amplifier. Persons interested in obtaining the amplifier should communicate directly with the manufacturer, Universal Broadcast Equipment Corp., 6035 Northwest Highway, Chicago 31.
Power Lawn Mower p. 8 col. 1	In the listing of the Coldwell Bear 21", the statement that the "cast gears not running in oil did not meet Federal Specification requirements..." was intended to refer to the transmission gears of the mower and not to any part of the Briggs & Stratton engine. (Through an error in arrangement of sentences, comment on the gears appeared to relate to the engine instead of the mower itself.)



The Consumers' Observation Post

BELTS, BUTTONS, AND BUCKLES cause considerable headaches for the dry cleaners. According to a little leaflet put out by the Pennsylvania Association of Dyers and Cleaners, belts with cardboard, rubberized, or paper backing cannot be cleaned successfully because the backing materials disintegrate in the process. Buckles may also be made of cardboard and covered with fabric, with disastrous results when subjected to the cleaning solvent. Buttons should be removed before a garment is sent to the cleaner. Highly ornamental ones may be made of fragile glass, or cemented layers that will come apart. When lacquered wooden buttons are left on a garment, the paint gets soft in the cleaning and pressing process and may bleed into the fabric, or the lacquer may chip off or crack. Plastic buttons which resemble a wide variety of materials such as glass, bone, or even metal may get tacky or soft, may melt and stick to the fabric, get out of shape, or otherwise deteriorate in appearance when the garment is cleaned. When in doubt, better take 'em off.

* * *

CHECKS ON POSTCARDS provide an excellent method of paying monthly bills without the need for an envelope and a 3-cent stamp. This time-saving, money-saving device has been introduced by the American Savings Bank of Atlanta, Georgia, according to a write-up in The Saturday Evening Post. The bank sells fifteen postcard checks for a dollar, which also pays for checking account privileges for a month. There is space at the bottom of the check where the signer can add his address and a description of the item the check is to cover. The recipients like the idea because they are saved the bother of opening an envelope and clipping the check to the statement for entry.

* * *

WORKERS IN THE FIELD OF ATOMIC ENERGY are exposed to the hazards involved in the study of radiation phenomena and the slightest negligence may result in serious injury. During the past year it was brought to public attention that several atomic scientists were going blind as the result of exposure to rays from an atom-smashing device. As Dr. T. R. Van Dellen points out, the potent rays of the cyclotron have been applied to make various chemicals radioactive for use in diagnosing and treating bodily ailments, but some of these products are potentially dangerous and should not be used by novices, or indiscriminately, even by experts. The doctor warns that the X-ray must be used with extreme caution; that even the device used in shoe stores to demonstrate the position of the feet within a pair of shoes is potentially harmful and should not be left on too long, particularly in fitting children's shoes.

* * *

WILL THE NEW SYNTHETIC DETERGENTS have an unfavorable effect on fine chinaware, is a question that has been raised. The possibility of damage to dishes washed with such products appears to be negligible. As one laboratory expert has pointed out, however, fine china with gold or silver decoration should always be washed with mild detergents or soap in lukewarm water since hot water and strongly alkaline products are injurious to the metallic trim. Such dishes should also be washed promptly after use, for vinegar, lemon juice, and salty foods may injure the decorations if they remain in contact for any length of time.

* * *

TOOTH MARKS IN ORANGE AND YELLOW ORANGE CRAYONS provided chemists of the Connecticut State Experiment Station with a clue to the illness of a 2-1/2-year-old boy who suddenly turned blue in his crib. The child was saved from death by quick action of doctors at the hospital to which he was rushed. Analysis of the crayons indicated the presence of lithopone, a white paint pig-

ment. The chemist pointed out that lithopone is essentially a mixture of barium sulfate and zinc sulfide and reasoned that the zinc sulfide would, if taken internally, react with the acid gastric juices to generate hydrogen sulfide. It may have been absorption of hydrogen sulfide into the blood stream that caused the serious condition which nearly brought death to the baby.

* * *

BETTER BREAD will be made available by commercial bakeries only if the housewives in the United States demand it and show willingness to pay for the better ingredients required, reports Dr. C. M. McCay, well-known nutritionist of Cornell University. Dr. McCay would like to see bakers use more dry milk solids, wheat germ, yeast, and soy flour. He is pleased that nitrogen trichloride, a poison chemical used as a conditioning agent, which has been found to cause running fits in dogs fed with bread made with flour containing it, will be banned after this coming August. Dr. McCay implies, however, that housewives could have stopped the millers from using the nitrogen trichloride (Agene) long ago by demanding bakery and grocery store items made from unbleached flour and suggests that the wide use of bread softeners, too, may be undesirable since there have been no conclusive experiments to show that such chemicals are absolutely without risk of harm to the digestive system.

* * *

GALLSTONES can now be detected by means of a small device developed in the Ordnance Research Laboratory, Pennsylvania State College, by Dr. Eric A. Walker and E. G. Thurston. The basic principle is that of a phonograph pickup. The standard surgical probe is held in a chuck or handle which contains a glenite ceramic piezo-electric element connected to an amplifier; a sound is emitted when the probe comes in contact with a gallstone. Taxpayers should be pleased to learn that the naval ordnance work of the laboratory has produced a valuable contribution to civilian welfare, even if only as a by-product of the study of weapons for offense and defense.

* * *

SOMETHING UNUSUAL IN ADULTERATION of food products was penalized early this year by a federal district court with fines on several counts. The Red Bird Frosted Food Co., which was involved in the violation of the Food, Drug, and Cosmetic Act, was caught "stretching" 16-oz. cartons of frozen raspberries by allowing them to thaw partially, pouring the contents of one 16-oz. carton into two 12-oz. cartons, and filling up the cartons with syrup.

* * *

DISH TOWELS MADE FROM OLD FLOUR BAGS were reported by Time magazine this past January to be selling briskly at a big New York department store and from Sears-Roebuck's new catalog. Women's instincts or experiences on this point were undoubtedly good. In a report by CR in June 1944 on tests of some 22 dish towels, the one which resembled the flour sack towels proved to be one of the better products, particularly with respect to moisture absorbing capacity.

* * *

PLASTIC FOOD CONTAINERS are light and convenient to use, but the clear plastic receptacles for butter and other items kept in the ice box develop stains that are not removable except by the use of abrasives (which should be very mild), reports Ephraim Freedman, director of New York's R. H. Macy's "Bureau of Standards." The gentleman also observes that coffee and tea stains in some plastic ware present a similar problem.

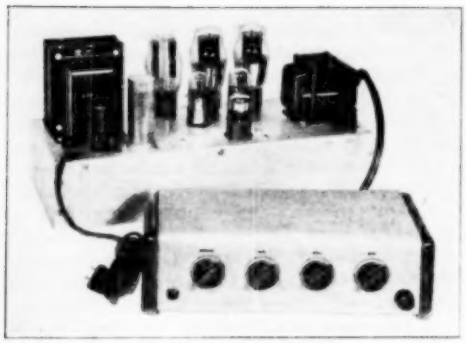
* * *

POISON IVY AND POISON OAK can take a lot of joy out of early spring gardening and picnicking in many parts of the country. According to a study reported by David H. Klasson in a medical journal, 126 cases of poison oak poisoning were treated by administering ascorbic acid in prophylactic doses, with very favorable results. Of two groups of people who were susceptible to poison oak and who were exposed to it, none developed dermatitis after taking the dose of ascorbic acid. Of those who did not take ascorbic acid, some developed dermatitis ranging from mild to severe.

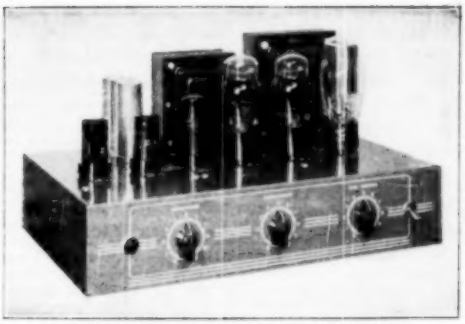
* * *

CHEMICAL KILLING OF WEEDS is not for the home gardener. Stick to the hoe and wheel cultivator, advises the U. S. Department of Agriculture. In home

(Continuation of this section is on page 29)



Brook, Model 12A3, Audio Amplifier

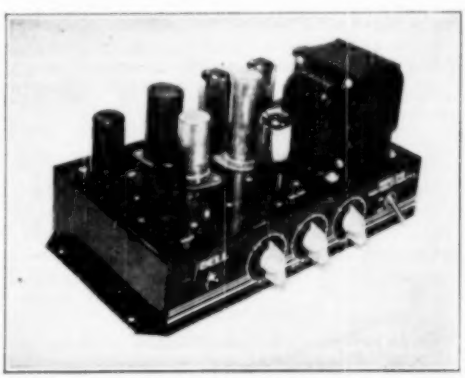


Universal, Model UB-15, Audio Amplifier

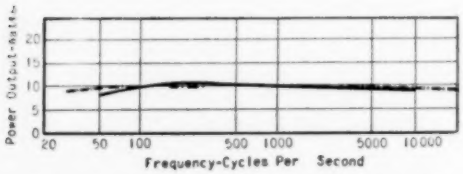
Four Audio Amplifiers

INTEREST of CR's subscribers in assembling the component parts to make a good radio-phonograph combination continues at a high level. Because the audio amplifier is a vitally important element in any such system, CR has tested a considerable number of amplifiers in the hope of finding at least one or two makes that would afford really good quality at a low or moderate price.

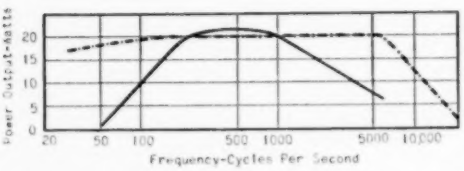
Some of the factors to be considered in making a choice of an amplifier of high-fidelity grade are: (1) The over-all weight of the unit; an amplifier, of necessity, makes use of at least two transformers and usually a choke. If the amplifier is a good one, these parts are of good size and weight, and the whole unit will be heavy. (Poor amplifiers will nearly always be small and light in weight.) (2) Separate controls for gain (volume), bass, and treble are usually necessary. If the particular tuner with which the amplifier is to be used has separate controls for bass and treble, however, the amplifier tone controls can be set at the flat-response position (on which information should be obtained at the time of purchase) and left there permanently; thereafter, the tone controls on the tuner can be used, as use of these is normally more convenient. (3) Because inputs from crystal and magnetic pickups, as a rule, require different compensating circuits and different amounts of amplification, makers of some amplifiers provide for connection to either type of pickup. In the past, crystal pickups have been low-priced compared to the magnetic; that fact accounts for the great majority of record players' and radio combinations' use of crystals. At the present time, it will not be necessary to provide for crystal input in an amplifier meant to be used with high-fidelity equipment, and the input for a magnetic pickup is all that will usually be needed. In addition to the pickup connection, there should be a "radio input" connection, which does not call for any compensating circuit but gives "flat" or level response. (4) The use of triode output tubes is to be preferred. A very exceptional designer can get good results with beam-power output tubes, but with them there should be at least 10 and preferably up to 20 decibels of negative feedback, and the voice coil winding of the output transformer should be included in the feedback loop. It is best not to buy a pentode or beam-power output amplifier unless information regarding the feedback and its amount and inclusion of the voice coil winding of the output transformer is available in writing.



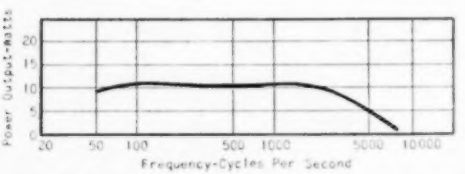
Bell, Model 2122, Audio Amplifier



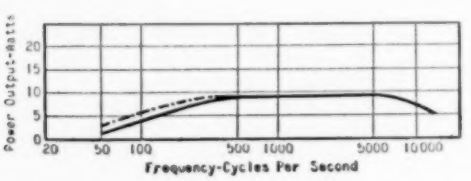
The broken curve in the above graph shows the frequency response of the *Brook 12CJ* amplifier over the audio frequency range using 30 to 20,000 cycles constant-voltage input. The solid curve shows the response of the same amplifier measured at 2% distortion. The latter curve should be compared with the curve showing the frequency response of the *Goodell NSA1* amplifier, also taken at 2% distortion, and the curves for the two samples of the *Bell*, Model 2122. In the case of the latter amplifier, the manufacturer's frequency response curve was flat within plus or minus 1 db. (load unspecified) from 20 to 20,000 cycles, and is the type of curve usually seen in amplifier advertisements. Such curves are taken at a small fraction of the rated output and rarely make any mention of the amount of distortion present (which is, of course, a matter of crucial importance).



The broken curve above shows the response of the *Universal UB-15* amplifier to a constant input at audio frequencies ranging from 30 to 20,000 cycles per second. The solid curve represents the response obtainable with distortion limited to the very low value of 0.5%. While the latter curve may appear to be quite poor, it must be remembered that the distortion figure is very low, and observable only by careful instrumental methods. (The trained ear does not detect distortion below about 3%.)



Curve showing the frequency response of the *Goodell NSA1* amplifier measured at 2% harmonic distortion. Note good performance at low frequencies, and poorer performance at frequencies above about 3000 cycles per second.



Curves showing the frequency response of two samples of the *Bell 2122* amplifier measured at 2.5% total harmonic distortion. Note poorer performance at frequencies below 300 and above 6000 cycles, compared with the *Brook*.

The most important single question in the choice of an amplifier is the amount of power available over the whole effective audio range at low distortion. It is CR's view that an amplifier which will deliver 10 watts output over the frequency range of 50 to 15,000 cycles is entirely adequate for use in the home. In this connection, it has been said that 10 watts will produce with a normally-efficient speaker and housing located in a 2000 cu. ft. room (12.5 x 20 x 8, for instance) within 5 decibels of the same sound level as the average listener receives at full symphonic crescendo in a concert hall. These figures may sound low to a person who has been accustomed to believe the advertising of typical advertisers, but the output referred to is actually much higher than will usually be supplied at the extreme upper and lower frequencies, and it is a rare amplifier indeed which is stated by the manufacturer as supplying 10 watts output and will deliver as much as 10 watts at 50 and 10,000 cycles with distortion that does not exceed a reasonable maximum limit, say 2½%.

In addition to these characteristics, there are several so-called features or trick circuits often introduced mainly for the sake of their sales appeal to lead the purchaser into choosing one amplifier in preference to another. Chief among these, perhaps, is the volume-expansion-compression circuit, which nominally acts to make the loud tones louder and thus is said to restore the original dynamic range which was present in the music as it was performed but could not, for technical reasons, be completely recorded on the record. Use of this type of circuit is not recommended. Another feature strongly promoted in recent months is a noise-reducing circuit, or Dynamic Noise-Suppressor, based upon the ideas developed by H. H. Scott, or some variation of them. The principal argument against the use of this circuit is that even the ardent music lover will not take the time and trouble to set the controls correctly most of the time; that the noise reduction that takes place is accompanied by annoying constant change in the character of the background noise. It appears that records that have unbearable noise or distortion are best not played at all. They can be played in the usual fashion by cutting off the highs with a tone control. (Very sharp high-frequency cut-off filters are not desirable, as they introduce disturbing distortions.) Even the fastest-acting dynamic controls are too slow to preserve the character of attack-tones in music (these are at least as important in preserving realism as the reproduction of the full harmonic range).

On the side of those who argue in favor of the noise reducing or suppressing circuit feature is the claim that the consumer who likes fine music sufficiently well to invest in fine reproducing equipment can be trusted to handle the suppressor con-

trols intelligently; the instrument permits the whole range of sound that is recorded on available records to be transmitted most of the time; the few passages in which the highs may be lost by the suppressor are a small price to pay for the large reduction in background noise; the intermittent character of the background noise heard with the suppressor is much less annoying than the constant racket of wide-range reproduction or the total loss of highs with a fixed high-frequency filter.

In sum, it is CR's view that unless and until the suppressor arrangement has proved itself better than it has up to the present time, in actual use, the average high-fidelity fan will probably do better without it, especially if its cost (it is likely to add $50 to $75 or more to the price of an amplifier) is a consideration of importance.

Readers should know that distortion figures are meaningless as usually shown in the advertising of amplifiers. The distortion figures that count are *those which will hold up when a normal loud-speaker is driven at a good output level by the amplifier.* Beam-power tube amplifiers are often given distortion ratings equal to or better than triode amplifiers, yet the latter sound to the practiced ear definitely better and "cleaner." The reason is in the nature of the reaction of the speaker upon the amplifier and its output transformer, which is quite distinctly different in the two cases. The triode favors clean tones with a minimum of hangover (undamped transients). In addition, the varying impedance of a speaker with frequency causes greater variations in output distortion from "beam power" tubes than from triodes, unless, as previously mentioned, sufficient feedback is used.

Amplifiers listed were for a-c operation only. Ratings are cr49.

A. Recommended

Brook High Quality Audio Amplifier, Remote Control Model 12A3 (Brook Electronics, Inc., 34 DeHart Place, Elizabeth 2, N. J.) $169.50 net. Availadle without remote control (*Model 12A2*) at same price. An excellently constructed amplifier. Frequency range, 20 to 20,000 cycles ± 0.5 db. referred to 39.5 db. Power output, 10 watts within 1 db. plus or minus from 20 to 20,000 cycles with only 2% distortion (excellent, ample for any normal home use). Hum level, within the limit set by the best engineering practice; with equipment connected and gain control in maximum position, *no hum* could be heard a few feet from an efficient speaker. For any additional specification information, the subscriber is referred to the *Brook* advertising material; this turned out to be remarkable and exceptional in that the amplifier tested was found in each detail to be as good as or better than the maker's advertising claims represented it. Where greater output than 10 watts would be required, as in a very large room or auditorium, or for the benefit of a person with considerably impaired hearing, the 30-watt *Brook Remote Control Amplifier*, Model 10C3, is available at $237 (similar in characteristics to the *Brook High Quality Audio Amplifier*, Model 10C2, reported in our Bulletin of May 1947). *AA3*

B. Intermediate

Goodell, Model NSA-1 Dynamic Noise Suppressor Amplifier (Minnesota Electronics Corp., 97 E. Fifth St., St. Paul 1) Approximately $130 net. 14 in. x 10½ in. x 8 in. overall. Consisted of a separate plug-in preamplifier using 2 miniature triodes and the main amplifier using 11 tubes including two 6L6's in output stage. Quality of parts and construction were excellent. Circuit was unusually complex, a necessity when the *Scott* Dynamic Noise Suppressor is employed. Preamplifier was notably free from hum. Very briefly, the action of the suppressor circuit was to vary the bass and treble response continuously according to the amount of the high-frequency components present in the incoming signal. The effect thus accomplished was to widen the pass band of the amplifier whenever high levels of high frequencies were present, and to narrow it at other times. There were two controls for the suppressor section of this amplifier, one with 5 positions which established the frequency range inside which the dynamic action takes place, and the other to establish the sensitiveness of the action. The response curves, which were run for all 5 positions of the suppressor gate control, indicated that with the "gate" closed, approximately 12 db. of bass cut existed at position 5, a condition which many might not like, for although many dislike the noise usually accompanying high-fidelity recordings, they would not wish to lose the advantage of a good full bass quality in order to obtain relative freedom from high-frequency noise. (It is, however, agreed by many sound engineers that there must be a certain balance between the high and low frequencies, and if the highs are "cut," then the bass must be correspondingly cut, else music will often tend to sound "unbalanced.") Bass and treble tone controls were included, and furnished both boost and cut. In listening tests, there was a harshness in the high register, and it was necessary to operate at reduced pass band for pleasant listening. It is believed that use of an output transformer of higher quality, with additional feedback, would have made this amplifier acceptable for high-fidelity use. It is understood that since the test was finished, the manufacture of this amplifier has been discontinued. The listing is nevertheless carried for the value which various points in it will have for the consumer, including those who may have purchased the model or who may for other reasons be interested in its performance. 3

Universal, Model UB-15 (Electronic Sound Engineering Co., 4344 W. Armitage Ave., Chicago 39) $147.50 list.[1] Cabinet size, 14 in. x 10 in. x 8 in. high. The rated 20 watts power output was obtained through use of 6 tubes, including two 6L6's in push-pull. One high- and one low-gain input with separate volume controls. Output impedances of 1.7, 10, 20, 320, and 500 available. Parts and workmanship, excellent. Frequency response was flat (± 1 db.) from 30 to 15,000 cycles at 1 watt. The extraordinarily low level of distortion found in the tests was largely to be accounted for by the unusual output transformer connection and large amount

[1] List prices of radio equipment items are usually subject to a discount which is customarily 40%.

of feedback. Among other advantages, this results in an extremely low effective source-impedance giving effective electrical damping to the loud-speaker, even better than that normally available with use of triodes. Equipped with a single tone control; on this account, proper use of the amplifier for radio reception would require a tuner having bass and treble boost and cut controls, and there would be severe limitations in the adjustments of the amplifier for record playing. Would warrant an *A-Recommended* rating if used as a *basic "flat-response" amplifier* only and if 6L6's are replaced by more expensive 1614's. While the more than ample power rating of this amplifier was not attained at frequencies above 10,000 cycles, the distortion present in it at the lower frequencies was lower, power for power, than that present in the very good *Altec Lansing*, Model A-323B Audio Amplifier (October 1948 Bulletin), and its output quality was considered distinctly preferable to that of the *Altec* in listening tests. High plate voltages were used on the 6L6 output tubes, which may make necessary their replacement after a rather shorter period of use than normal for such tubes. The amplifier would be improved if the electrolytic condensers used were replaced by condensers having a working voltage of 600. 3

• • •

Bell, Model 2122 Hi-Fidelity Amplifier (Bell Sound Systems, Inc., 1183 Essex Ave., Columbus 7, Ohio) $41. Chassis size, 10½ in. x 7½ in. x 6 in. high. Weight, 10½ lb. 6 tubes used including two 6V6's in push-pull and rated at 10 watts output. 4 separate inputs provided: for radio tuner, crystal pickup, low-level magnetic pickup, and high-level magnetic pickup. Output impedance: 3.4-4 ohms, 6-8 ohms, 15-18 ohms. With exception of the small output transformer, a distinct disadvantage in any audio amplifier, used good quality parts and was well constructed. Controls: On-off, Volume, Bass and Treble; the latter two provided adequate "boost" and "cut." Approximately 10 db. of inverse feedback used, which was effective. The frequency response of this amplifier was fairly good. The output power held up well at medium and high frequencies, but was poor at the lower frequencies. A second sample of this amplifier showed somewhat improved low-frequency response. Both samples had a tendency to oscillate at frequencies below 100 cycles, which was apparently the cause of a certain slight rasping quality noted in listening tests. A third sample, however, did not exhibit this tendency to oscillation 1

A Power Lawn Mower

THE *Coldwell Bear 21"* power lawn mower was tested in much the same manner as mowers of this sort previously reported (in CR's August 1947 BULLETIN) using Federal Specification 00-M-681 wherever applicable. The *Coldwell* was given a thorough engineering examination and a use test by competent operators, and a continuous operation test for eight hours. The grass-cutting test to demonstrate speed and performance was made on lawn grass approximately 4½ in. high.

A part of the endurance test consisted in mowing a part of a vacant lot on which the grass was 10 in. high, but the mower performed satisfactorily even under this unusual load.

Rating is cr49.

B. Intermediate

Coldwell Bear 21" (Coldwell Lawn Mower Div., Coldwell-Philadelphia Lawn Mower Co., Inc., Newburgh, N.Y.) $165. Mower: width of cut, 21 in.; height of cut adjustable from ¾ in. to 1½ in. Cutting reel consisted of 5 knives, 6 steel spiders; cuts per foot of travel (i.e., number of reel knives passing over cutter bar for each foot of travel of mower), 10.2, satisfactory. Weight, 105 lb. Failed to meet Federal Specification for blade hardness by a small margin. Engine: *Briggs & Stratton*, rated hp. 0.7 to 0.85, 4-cycle, sleeve bearing; lubricated by splash system; clutch, open-disk type; rope starter. Cast gears not running in oil did not meet Federal Specification requirements, but gears were found to be smooth. Fan housing was not protected against entry of grass clippings, which quickly clogged fan and so reduced effectiveness of cooling and governing devices. Maximum speed, approximately 3.7 miles per hour. Easy to use for ordinary level-ground mowing. To facilitate trimming or cutting in corners, clutch could be operated by raising or lowering handle without use of the regular lever control. This feature, however, was not found to be particularly effective. 3

Coldwell Bear 21". Motor has an undesirable tilt forward when knife is adjusted to maximum (1½ in.) cutting height.

Builders' Finishing Hardware

IT IS generally worth while for the prospective home builder or remodeler, particularly if he does not have the benefit of an architect's or builder's advice, to have some knowledge of hardware and the problems connected with its use.

Good hardware is important. The University of Illinois Small Homes Council Circular F15.0 comments: Hardware

> must perform certain functions dependably and inconspicuously. These functions are:
>
> 1. To provide protection and security from intrusions; to insure privacy.
> 2. To operate movable parts of the house satisfactorily and conveniently . . . without failure or annoyance to the homeowner.
> 3. To contribute to the attractivenss of the house. (Hardware should blend with the background rather than attract attention.)
>
> To do these things, the hardware must be *durable*, and properly designed for its particular job and the place where it is to be used. It must serve its functional purpose well, and at the same time conform to the architectural character of the home.

For the average small home, the difference in price between good and poor quality hardware will seldom exceed $25 or $30. Thus cheap, shoddy hardware which soon deteriorates in appearance and fails to function properly is a poor investment in the long run.

Authentic period designs appropriate to architecture and furnishings are available. Cape Cod and early Colonial designs usually are solid brass castings with smooth lines and irregular oval roses under the cylinder and knob; full-length plates are not used. For American farm and ranch house dwellings, hardware (chiefly hinges, thumb latches, and cupboard trim often of "L" and "H" shape) made according to a similar design is to be had in wrought iron, usually with a coarse-grain finish and with simulation of markings by the blacksmith. Machine-forged knobs and cast knobs in black iron finish, with simple roses, are available. These machine-made knobs are practical because they are easier to handle, and have a fairly authentic appearance, although the oversymmetrical roses and cylinder collars have only the "blacksmith finish" to distinguish them as to period. Most machined and cast bronze strap hinges and hinge plates imitating Pennsylvania Dutch or early Colonial design are not true replicas; they are overornamented and have an excess of hammer markings. New England, Southern Colonial, and Georgian hardware accessories are associated with large manor houses, and are more elaborate and of good symmetry. Frequently the owner of a small home is irresistibly attracted by the beauty of this hardware, and installs it in a small Cape Cod or Colonial house in which it is not at all appropriate. Spanish and Italian Renaissance hardware is extremely ornate, and requires good workmanship and expensive castings. This so-called "period" hardware is made of bronze cast in sand molds and finished in attractive and durable "aged brass" or half-polished iron finish.

The design of popular styles of hardware has changed little, and there is a sufficient variety of patterns available in hardware stores to permit a good selection. Lock sets in steel or brass are available in the common American design which is represented by a rectangular escutcheon plate with beveled sides. Interior lock sets suited to the so-called "modern" trend in furniture and homes have escutcheon plates with ribbing, and setbacks similar to the trim of modern styled equipment. The simplified modern forms attain the stream-

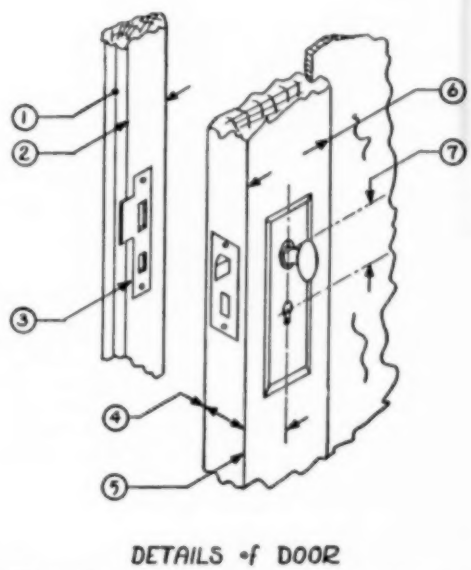


Figure 1 — *(1) Door frame, (2) jamb, (3) strike plate, (4) thickness of door, (5) backset, (6) stile, (7) spacing.*

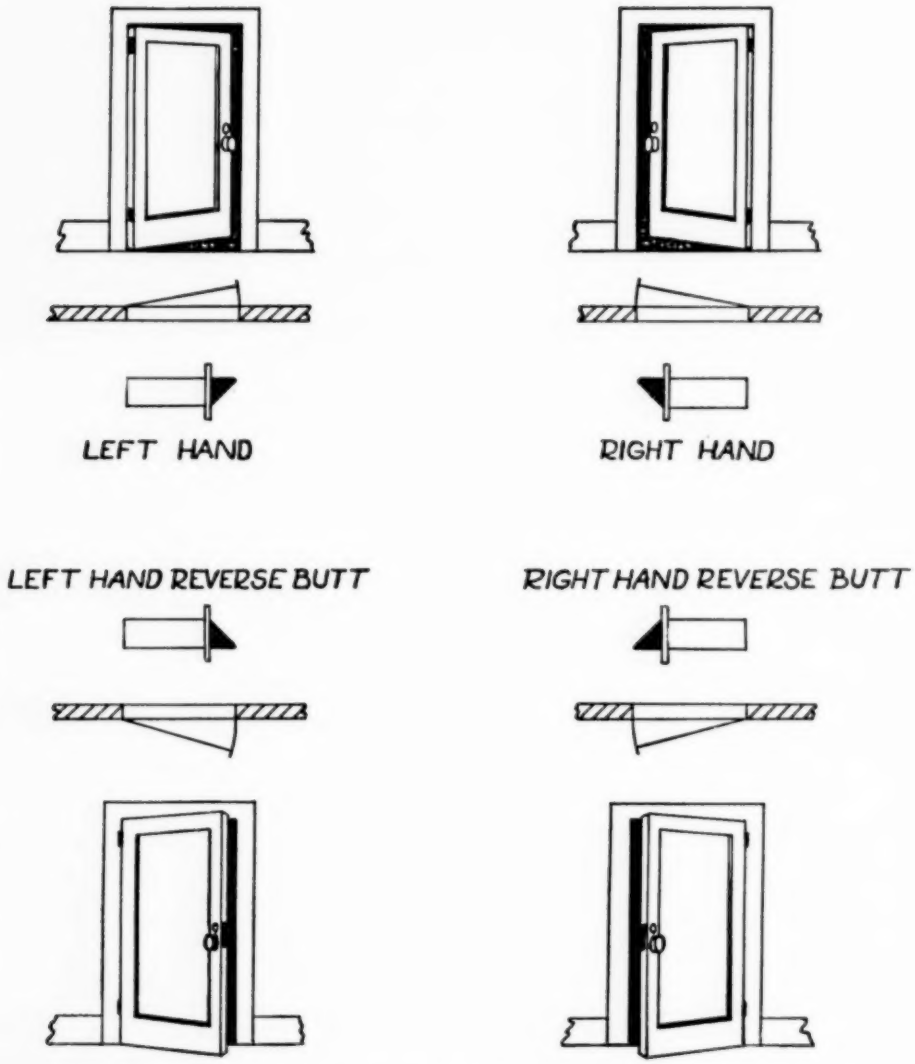


Figure 2—*Illustrations showing need for correctly positioning latch bolt, depending upon hang of door*

lined effect by reverting to the use of skeleton trim, eliminating the escutcheon plate entirely, and using only a plain ring or rose under the knob and cylinder, or over the keyhole. The newest designs employ the tubular type of lock with either fluted glass knobs or brass knobs with keyhole at the center of the knob.

Hardware for Outside Doors

Perhaps the most important items of hardware are those used on outside doors. Their parts must be of material that will withstand corrosion by weather conditions, and the lock should be of a design that affords reasonable protection against unauthorized intruders. Hinges, screws, and outside knob and trim should be of solid brass, or solid bronze; brass-plated material and screws of iron or steel eventually rust and streak a door. A heavy outside door set in a wood frame should have three butt hinges each measuring 4 inches by 4 inches when open, usually of wrought brass. The best hinges are of concealed ballbearing construction,

made of solid brass or bronze. (So-called wrought brass is *not* hand-wrought brass but a thinner machine-worked brass which is lighter than cast brass.) Loose-pin hinges are used because it is difficult to mount a door when the halves of the hinges cannot be separated. To match the style of architecture of the building, some doors require hammered or wrought iron handles and hinge straps. The same effect is obtainable with cast bronze, which eliminates danger of corrosion and rust streaking that may occur with iron. Doors hung to steel frames require template butt hinges having a standard matching arrangement of screw holes. The width of the stile (one of the primary members of a frame, into which the secondary members are tenoned) determines the size of the hardware trim that can be used on a door. The backset is the distance of the center of the knob hub from the face of the lock; this distance should be one-half the width of the stile in order that the knob, keyhole, and escutcheon plate shall be centered on the stile. (See Figure 1.) Many doors, especially of the French type with narrow stiles, require locks with short backsets; lever handles sometimes are used in place of knobs because of insufficient hand clearance.

Depending upon its location and use, a door is hinged at either the right or the left, and opens in or opens out with reference to the side from which the key is inserted in the lock. (Outside doors of most single-family dwellings open in.) There are thus four possible combinations, as shown in Figure 2, and the lock must correspond to the conditions of the door in question. The bevel side of the latch bolt must face the strike plate and ride past it when the door is closed. If a right-hand lock were used on a left-hand door, the bevel of the bolt would face away from the strike plate, and the door could not be closed. The width of the lock case must be less than the thickness of the door (except in the case of a new type of unit which is installed by cutting a notch in the door), in order that the lock can be mortised into the door; spindles must be of such length that the knobs will neither bind nor be too loose. Details of a lock installation are shown in Figure 1.

Pin-tumbler cylinder locks (which is the kind that many people incorrectly call the Yale lock, from the fact that Yale was the first well-known brand of locks of this type) afford maximum security, and should be used on all outside doors of house or garage; a good lock has at least five pins. Cylinder locks can be keyed alike. It is also possible to operate all locks of a type on the property with a single key (a "master key"), even though each individual lock may be opened by a different key. The lock case into which the cylinder is fitted should be a heavy iron casting with two locking setscrews in its face to prevent turning or loosening of the cylinder; the cylinder must not be too long for the door thickness, for a protruding cylinder can be jimmied easily.

If an outside door is already fitted with a mortised lock of a variety offering poor resistance to picking, additional security can be obtained by installing a cylinder lock of the type that is mounted on the inside surface of a door. This may be of the familiar night latch type, with spring-actuated beveled latch, or for better protection, may be of the dead bolt type. The spring-actuated beveled latch can be pushed back by an intruder who has learned the art of opening doors without the proper

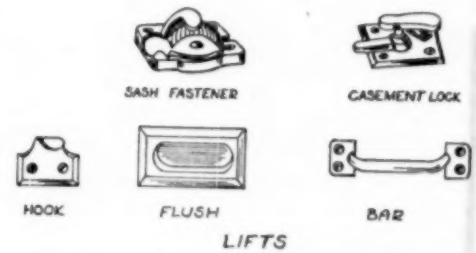


Figure 3 — Conventional Sash Hardware

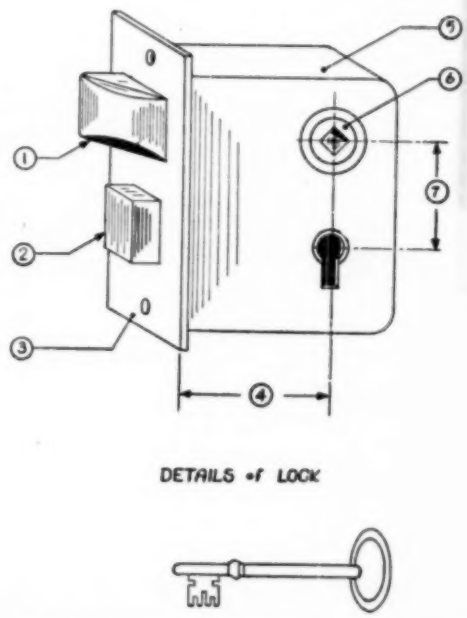


Figure 4 — *(1) Latch bolt, (2) lock bolt — "dead bolt," (3) face, (4) backset, (5) case, (6) spindle hub, (7) spacing.*

key by use of a thin flexible metal strip inserted through the crack of the door. The dead bolt, however, offers an important advantage as it can be pushed back only by unlocking with a key; its disadvantage is that it does not spring into the locked position but must be locked with the key when the occupant leaves the house. (A tubular mortise dead lock is better than a rim night latch.) A popular practice this year is the use of a tubular dead lock and tubular latch actuated by outside handle with knob and rose inside. On the back door, knobs are used on both sides. Front and rear doors are keyed alike. This is economical and saves mortising for large front door lock. A surface lock must be mounted securely to the door, and all bolts, screws, or other fastenings must be of such type that they are inaccessible from the outside. The case should be a heavy casting, and the bolt should be of hardened steel, to resist attempted tampering.

Hardware for Interior Doors

Hardware for interior doors may be of lighter construction than that used on outside doors, and normally need not have such a high degree of resistance to corrosion. An interior door of ordinary size requires only two hinges. Chromium-plated hinges are expensive. Heavily plated steel hinges are considered satisfactory, and prime-coated (painted) steel hinges are equally serviceable. A floor surface spring hinge used on a swinging door, as between kitchen and dining room, should have a checking spring by means of which the door can be held in the open position.

For interior doors other than those of closets and bathrooms, locks may be of either the bit key type or the tubular latch type. The bit key lock has a dead bolt operated by the key, in addition to the latch bolt operated by the knob; a lock of this type and a typical key are shown in Figure 4. A tubular lock has a latch bolt only, and its case is about one-third the size of the case of a bit key lock; it also can be operated as a dead bolt by means of a pushbutton in the knob or by an auxiliary lever. For bedroom and bathroom doors, locks can be obtained of a design that permit the door to be opened from outside with an emergency key, if circumstances, such as illness or accident, require it. Tubular locks formerly were stamped from metal of light gauge, and the resulting weakness of the lock caused a loss of confidence in the security of this type of hardware. Tubular latch sets are now available, however, in securely assembled cases, and are of equal utility with other interior lock sets. Die-cast cases and parts for any kind of lock that are made of white metal are relatively undesirable as the die-casting alloy material sometimes loses strength with time (especially in a rigorous climate), and may fracture.

Brass hubs are used in good locks to hold the knob spindles, because brass bearings provide easier operation than do bearings of cast iron. A lock of the better grade is provided with a double-compression spring and guides for the latch bolt; the construction of a cheap lock will often be such that the latch bolt will not ride into the lock properly when the door is closed. The better manufacturers give information in their catalogs and on the labels of lock-set packages which help the observing consumer to buy a lock of a desirable type, but there is need for a good deal of standardization of construction and description in this field so that persons not familiar with the problems and with the weakness of certain types of construction can be protected against deception or misunderstanding. Most interior locks can be reversed by the dealer, if necessary, to make them fit the swing of the door; the purchaser should assure himself that this has been done before accepting a lock.

The durability of the trim depends upon the materials used and upon the method of manufacture. Cast brass and bronze are the most durable, but are expensive. Wrought bronze knobs with cast brass shanks are reasonable in price and attractive. As already noted, white-metal alloy parts are to be suspected, for die-cast lock parts made of this material often fail or come apart. Each knob should be fitted with two locking setscrews in its threaded hub, to fit the threaded spindle. A cheap knob whith unthreaded hub is mounted on a spindle which has a number of holes for the setscrew used in mounting the knobs; the common fault is that the holes rarely coincide with the mounting requirements of different door thicknesses, and the knobs therefore either bind against the plates or must be fitted with washers to take up the slack. Most low-priced knobs have single setscrews of coarse thread; when a single setscrew loosens, the knob slips and falls off the spindle. When that happens, washers often are lost, and it is difficult to remount the knob properly. Glass knobs are mounted on threaded metal hubs, but a glass knob usually has only one setscrew. An important point to note when purchasing a glass knob is the method by which the glass is held to the metal shank; a portion of the shank is rolled over to hold the glass, but frequently in such a way that the knob can rotate within the shank, and chip or pull out. Because of this fault, most glass knobs today are not too satisfactory. The common type of wrought or stamped knob usually is fitted with a square hub which often is a separate piece set into the shank of the knob; this assembly should be checked to see if the hub can loosen and permit the knob to turn without at the same time turning the spindle that operates the latch bolt. Plastic knobs even when

fitted with reinforcing metal inserts so that they can be mounted securely on spindles are likely not to prove satisfactory; knobs without such inserts are not strong enough to withstand the stresses of continual turning and pulling.

The type of door and the functions of the rooms between which it is used generally determine the finish of the hardware; knobs and trim should harmonize with the finish and decoration of the room which they face. Chromium-plated finish is practical for kitchens and bathrooms; polished chromium-plated brass knobs are excellent for beach cottages and homes exposed to salt spray.

Most general-purpose steel lock sets now available are plated with a dull brass finish; this does not wear well, and the knobs tarnish and corrode within a short time. Medium-priced locks of better grades have wrought brass plates and knobs, and usually are finished to a high polish and protected with lacquer. The fact that the lacquer has a very short life is not particularly serious in view of the fact that the underlying metal is solid brass. In the highest grade of hardware, cast escutcheons and knobs are of solid brass with high polish, the brightness of which is maintained by polishing from time to time after installation. Most interior lock sets in the past had the so-called *statuary bronze* finish, but few of that variety are now available. Some lock sets, especially those of modern design, are available in *dull* nickel or bronze finish, oxidized and relieved so that the high points are bright, and the valleys are of a darker contrasting color.

Window Hardware

Some casement windows have metal frames, and the special hardware required for them is furnished by the manufacturers of the windows. Sash lifts for double-hung windows have always been a controversial point in residential hardware. For good appearance, the type which is substantially flush with the woodwork and provides a depression for entry of the fingers is used most frequently, but many users, especially women, break their fingernails in lifting stubborn sashes. Both the hook and the bar types are now available, and are more practical from a convenience standpoint than the flush type, but lack appeal to the home owner whose house is furnished with either modern or period furniture.

Cupboard Hardware

Metal kitchen cabinets and similar equipment are supplied complete with hardware, but a broad assortment of hardware is available for use on odd cupboards and the like. Many, if not most, popular-priced door pulls and hinges are flimsy stampings that bend and distort under normal use, and which have finishes offering little resistance to corrosion by the vapors of a kitchen. The most suitable handles and catches are those which have smooth, simple lines and free-working parts. For hard use, handles may need to be reinforced by ribbing. Plastic handles and cupboard door pulls are likely to be practically worthless. Glass knobs and pulls can be had in a choice of colors, but are not suitable for hard use in a kitchen. A friction catch on a cupboard door that does not require to be locked will serve as well as a turn catch, and costs less, even allowing for the added cost of a door pull.

Miscellaneous Hardware

A stop should be provided for each door to prevent the knob from striking the plaster wall; metal stops are neater than wood stops. (Some are designed to be screwed into the floor or into the wall.) Either coat hooks or special closet trimmings should be provided for every closet.

Rough hardware includes sash weights, sash cords and chains, garage door hangers, window blind and screen hardware, and the like. Much of the hardware of this class commonly offered in hardware and department stores is pretty unsatisfactory (although prices charged for even the poorest kinds are not low). Among the worst of such items is hardware as commonly sold for screen and storm doors, most of which is characterized by parts that are too small or do not move freely, knobs that come off readily, material that rusts and corrodes or is too weak for its purpose.

Estimating the Cost of Hardware

To facilitate the purchase of hardware, a list should be made, even if only a few pieces are required. The steps are as follows:

1. List the number of openings—doors, windows, cupboards, etc.

2. Group similar openings requiring identical hardware. For example, three similar bedroom windows require three sets of the same hardware.

3. Make a cost sheet listing the number required and price of each item, and total.

Hardware requirements for typical openings of a hypothetical basement are listed below.

Opening No. 1 — 1 single entrance door, right-hand, yard to basement. 1 pair of butts (or 3 butts if the door is unusually large and heavy); brass to withstand weathering. 1 pin tumbler

cylinder lock with brass trim; plain design.

Openings No. 2, 3, 4 — 3 transom-type windows. 3 pairs of hinges; brass to withstand cellar dampness. 3 surface-mounted barrel bolts; brass or brass-plated. (This type of hardware is preferred to the usual basement window hardware consisting of steel hinges and japanned steel turnbutton or hook-and-eye fastening.)

Thread-a-Matic, for Threading Needles

ALMOST any woman who sews much, if she could afford it, would be glad to own a *Thread-a-Matic*. This interesting and useful little gadget is made by the Nelpin Mfg. Co., Inc., and distributed by The W. C. Burroughs Co., Inc., of New York City. It is priced at $2.95. Some housewives may feel they do not thread enough needles to warrant that expense, but others who find needle threading puts an undue strain on their eyesight might feel it is well worth the money.

Operating the *Thread-a-Matic* is simple. The needle is dropped point up into a hole (A), a button (B) is pressed *gently* down and held, the thread is slipped into a slot (C), and the button (B) released slowly. If a single thread is wanted, the thread is then cut off with a lever operated scissors-like arrangement (D), and the threaded needle pulled from the hole. If a "double thread" (four strands for sewing) is wanted, the needle is pulled from the hole before the thread is cut off with the scissors.

Trials were made by six women at Consumers' Research. It was found that when failures to thread the needle occurred, directions had not been followed exactly, and the button had not been operated slowly and gently as the manufacturer cautioned, or the thread had not been drawn through the slot as directed.

Cotton, silk, nylon, and mercerized thread can all be threaded into a needle with the *Thread-a-Matic*. The manufacturer advises that very coarse thread, less than 36 in size, and very fine thread, over 100, should not be used; these are sizes that are not often used in home sewing. The device works with "Sharps" needles, the medium-length needles with small, rounded eyes, in sizes 3 to 9, the sizes needed for most materials. It did not thread "Betweens," although one dealer's advertising specifically claimed that it would "thread all standard sewing needles."

The housewife will undoubtedly find that she can use the *Thread-a-Matic* to thread the needles for most of her sewing by hand; she may regret that the manufacturer did not offer some adaptation or accessory whereby his device could be used for threading sewing machine needles as well. She will also venture to hope that the device may be offered at a lower price in the near future.

Automatic Toasters and a Grill
A Preliminary Report

THERE are three general classes of electric toasters: the old-fashioned, or non-automatic kind which usually toasts one side of the bread at a time, and is turned on and off manually; the semi-automatic toaster which toasts both sides of the bread at once, and has a timing mechanism intended to turn the current off after the proper interval; and the automatic toaster which toasts both sides, shuts off the heat, and in addition raises or drops the toast to a position outside or partly outside the appliance when toasting is finished.

At the present time, the automatic toaster, although by far the most expensive, is the most popular type.

The old-fashioned non-automatic toaster has the advantage of simplicity and will as a rule be unlikely to call for repairs. The semi-automatic toaster usually has a bell or other warning device to tell the user that the toast is ready, and the current is shut off when the toast is done.

At the present time, the automatic toaster is the favored type, in spite of the fact that its price will run to about three times that asked for a good grade of non-automatic toaster, and about twice as much as a semi-automatic toaster.

Nine automatic toasters, two semi-automatic toasters, and one toaster-grill have been tested by CR, and preliminary results are reported herewith.

All the toasters tested accommodated two slices of bread. (The grill barely accommodated two slices.) In all models except the combination grill the current was turned off automatically when the toast was "done" and all permitted the toast to be removed manually, if desired, before toasting was completed. The toasters with clock-work timing mechanism were: *Delta*, *Dominion 1105*, *Kenmore*, *Press-to-Magic*, *Monitor*, and *Universal*. Of these the first four required preheating in order that the toast produced should be of uniform character. All withstood the application of the high voltage breakdown test, and leakage current measurements showed that none of the toasters had excessive leakage.

The temperature of the parts of the toaster that have to be handled by the user should not exceed 130°F if metal, 150°F if made of wood or plastic, and the temperature below the toaster should not be so high as to cause damage to a varnished or other finished table surface.

In general, the toasters were found to be poorly adapted for the handling of very small or very large slices of bread. With three exceptions (the *Sunbeam*, *Samson*, and *Delta*), the toasters did not pop up the small pieces high enough so that they could be removed without burning the fingers without use of a fork. (The use of a metal tool in this way is definitely undesirable.) The *Samson* was the only automatic toaster which handled well the large slices cut from home-style loaves.

There was a wide variation among the different toasters in the amount of electrical energy required to toast a given number of slices, but in no case was the energy consumption deemed to be high enough to be an important factor to the average user. (The maximum was about 2.2 kilowatt-hours per 100 slices toasted medium; equivalent to about 8 cents at average rates for energy for 100 slices.)

The ratings which follow are to be regarded as tentative, as a 500-operation endurance test is still to be completed, and the results of this, to be reported later, may call for a re-rating of some of the toasters.

Rated energy consumption in watts, when stated on the nameplate, is given for each toaster, followed in parentheses by actual watts as measured at 118 volts.

Fully-Automatic Type

A. Recommended

General Electric, Cat. No. 159T77 (General Electric Co., Bridgeport, Conn.) $21.50. An ac-dc toaster with thermal switch timing mechanism. Choice of "pop up," or "keep warm" when toast is done. Rated watts, 1150 (1260). Temperature of handle, within safe limits. Crumb tray was of relatively flimsy construction; hard to remove without spilling crumbs, and difficult to replace. Toasting, satisfactory at *light* and *medium* settings; fifth slice at *dark* setting unevenly toasted. 3

Sunbeam, Model T9 (Sunbeam Corp., 5600 W. Roosevelt Rd., Chicago 50) $22.50. An ac-dc toaster with thermal-switch timing mechanism and voltage compensating device. Choice of "pop up" or "keep warm" settings. Rated watts, 1100 (1110). Temperature of handle (182°F), excessive. Adequate crumb tray for easy cleaning. At *light* setting first slice was underdone, fifth slice satisfactory and even; at *medium*, both

first and fifth slices evenly medium toasted; at *dark*, both first and fifth slices evenly overdone (burned). **3**

Toastmaster, Model 1B14 (McGraw Electric Co., Elgin, Ill.) $21.50. An ac-dc pop-up toaster with thermal switch timing mechanism. Rated watts, not stated, but 10.5 ampere rating indicates 1240 (1210). Temperature of handle, within safe limit. Adequate crumb tray for easy cleaning. At *light* setting, first slice underdone, fifth slice even and done; at *medium*, first slice medium and even, fifth slice dark and even; at *dark*, first slice dark and uneven, fifth slice unevenly burned. **3**

B. Intermediate

Camfield, Model 24-1-2 (Camfield Mfg. Co., Grand Haven, Mich.) $22. An ac-dc pop-up toaster with thermal switch timing mechanism and voltage adjustment. Rated watts, not stated, but 10-ampere rating indicates 1180 (1180). Temperature at handle (206°F), far too high (otherwise would warrant an *A* rating). Adequate crumb tray for easy cleaning. At *light* and *medium* settings, toast was underdone; at *dark*, toast was slightly burned. **3**

Delta Model 280 (Delta Mfg. Corp., 611 N. 40 St., Philadelphia) $19.95. An a-c toaster with clockwork timing mechanism. Toast and crumbs slide out at the bottom, at end of toasting period. Rated watts, 940 (930). Temperature of handle well within safe limit. Instruction pamphlet mentions a "slice adapter," but does not show or describe it; it was impossible to decide whether this is a separate optional gadget or a fancy name for the standard construction. At *light* setting, toast was underdone; at *medium* and *dark* settings, it was uneven. **3**

Samson, Model 5147N (Samson United Corp., Rochester 10, N.Y.) $21.95. An a-c pop-up toaster with thermal switch timing mechanism. Considered to have best timing mechanism of any of the toasters tested. Pop-up mechanism somewhat too energetic in action. A mechanical fault in the toaster as received, due to a cam which was stuck, required correction before toaster could be used. Rated watts, 1100 (1090). Temperature at handle, well within safe limit. Slices are placed end to end instead of side by side as in other toasters. Adequate crumb drawer for easy cleaning. Toasting even and satisfactory at *light* and *medium* settings; fifth slice at *dark* setting unevenly toasted. This toaster may warrant an *A* rating if it successfully completes endurance test. **3**

Universal, Model EA-B2601 (Landers, Frary, & Clark, New Britain, Conn.) $19.95. An a-c pop-up toaster with clockwork timing mechanism with a thermally operated brake to adjust start of timing. Rated watts, 1150 (1120). Temperature of handle (226°F), excessive. At *light* setting, toast was underdone; at *medium*, first slice was underdone, fifth slice light and even; at *dark*, first slice dark and uneven, fifth slice burned. **3**

C. Not Recommended

Monitor, Model C4-B (Monitor Equipment Corp., 640 W. 249 St., New York City) $19.95. An a-c pop-up toaster with clockwork timing mechanism fitted with thermally operated control to eliminate need for preheating. Contacts sometimes stuck in "On" position. Rated watts, not stated, but 8-ampere rating indicates 940 (900). Temperature at handle (178°F), and at table top below toaster, excessive. Easy to clean. At *light* setting, first slice underdone, fifth even and satisfactory; at *medium*, first and fifth slices both medium but uneven; at *dark*, first slice dark and even, fifth slice burned. **3**

Press-to-Magic (no model number) (Leslie Electric Co., Inc., Brooklyn 1, N.Y.) $19.95. An a-c pop-up toaster with clockwork timing mechanism. Rated watts, 800. Toaster was held together by flimsy metal tabs commonly found on cheap metal toys. Temperature at table top below toaster was excessive. Timer stalled often during toasting period; at other times contacts opened after 10 to 20 seconds. It was impossible to keep the toaster in operation long enough to obtain the required test data. This was considered the least satisfactory of the toasters tested; its high price was distinctly "out of line." **3**

Semi-Automatic Type

B. Intermediate

Dominion, Model 1105 (Dominion Electric Corp., Mansfield, Ohio) $9.98. An a-c toaster with clockwork timing mechanism; toast does not pop up when done. Rated watts, 700 (740). Temperature of handles, well within safe limits. Control had a tendency to slip toward *light*, making frequent resetting necessary. Rather difficult to clean. At *light* setting, toast was underdone; at *medium*, first slice was underdone, fifth slice uneven; at *dark*, first slice was uneven, fifth slice burned. **1**

C. Not Recommended

Kenmore, Model 307-63231 (Sears, Roebuck & Co., 4640 Roosevelt Blvd., Philadelphia 32) $9.95. An a-c toaster with clockwork timing mechanism; toast does not pop up when done. Rated watts, 660 (660). Temperature of handle (162°F) somewhat above CR s limit; had detachable cord and guard around plug terminals (desirable). Rather difficult to clean. At *light* setting, first slice was underdone, fifth satisfactory and even; at *medium*, first slice light and even, fifth dark and even; at *dark*, first slice dark and even, fifth burst into flames. **1**

Toaster and Grill Combination

C. Not Recommended

Dominion Combination Toaster and Grill, Model 1208A (Dominion Electric Corp., Mansfield, Ohio) $10.95. A conventional 2-plate ac-dc grill, with flat heating surfaces for toasting and grilling, and interchangeable waffle grids. Had a temperature indicator. Detachable connecting cord. Plug terminals lacked customary (and obviously requisite) safeguard to prevent accidental contact with live terminals when connecting plug to appliance. Rated watts, 600 (590). Temperature of handles, satisfactory. Easy to clean, and heating surfaces easily interchanged. (Test of the appliance was only as to its action as a toaster.) Preheating, until temperature indicator reached "bake" position, required six minutes; thereafter light toast could be made in one minute, dark toast in two minutes. Element burned out during the life test.

"Liquid Chimney Sweep"

Editor's Note:

The accompanying article continues the discussion of ***Liquid Chimney Sweep*** *which appeared in the April 1948* **BULLETIN**, *at page 24. That article reported an analysis of the product and indicated that the manufacturer, if it were effective, would have no difficulty proving it to be so by reference in his advertising literature to authentic, signed, carefully-executed tests carried out by competent mechanical engineering or chemical testing laboratories. It was indicated that our* **BULLETIN** *would report further information in the future on this product. The present article presents additional data which have been developed by a chemist-consultant in a test of* ***Chimney Sweep*** *(with the additional trademarked labeling* ***Easy-Aid****) under laboratory conditions.*

Various manufacturers offer other products intended to be used for improving combustion in the burning of coal. It may be worth while to remind readers at this time that the addition of chemicals in that case does not improve combustion to a significant extent unless they are used at a high and economically prohibitive rate of 20 to 40 pounds per ton of coal — a very different thing from occasionally sprinkling a few ounces on the fire, as the advertising of various "coal dopes" suggests.

There are also "soot removers." Manufacturers of these products claim that, when thrown on the fire, they will promote the burning of soot collected on heating surfaces, in the smokepipe etc. They are **not** *an efficient means of removing soot, and consumers should remember, too, that claims for such products are almost invariably exaggerated as to the amount of fuel which is being wasted because of the presence of a coating of unburned soot on heating surfaces of the boiler or furnace.*

Liquid Chimney Sweep is a product which is widely advertised and sold to "save precious fuel oil," "a sensational wartime discovery." The maker claims it need only be poured into the oil tank, 1 pint of *Liquid Chimney Sweep* for every 125 gallons, 1 quart for every 250 gallons, 1 gallon for every 1000 gallons of oil in the tank. Upon chemical analysis, composition of the product was found to be Stoddard Solvent (a high flash point petroleum naphtha of a kind much used for dry cleaning), 81 percent; naphthalene (a material mothballs are commonly made of), 8 percent; water, 1 percent; ammonia soap, 5 percent; copper soap, 3 percent; sodium chloride (salt), 0.5 percent; secondary or tertiary amine, 1.4 percent; free ammonia, 0.1 percent. The price of this mixture is $1.29 a pint, $4.29 a half gallon. No reason was known why a product of this composition would have the effect claimed. A product which is sold under a slightly different name and at the same price (each being described in advertising as a "sensational war-time discovery") is packaged with labeling which differs only in non-essential points, and is called *Easy-Aid Chimney Sweep—Liquid Type.* Directions are the same for both types.

A test of *Easy-Aid Chimney Sweep* was made by burning one of the poorer grades of commercial kerosene in an A.S.T.M. lamp according to the American Society for Testing Materials' Standard Method of Test for burning quality of kerosene oils. Condition of chimney, fuel consumption, and condition of wick at end of each test were determined after each 24-hour run. The wick was cleaned and trimmed after each test. Results are shown in the accompanying table.

M: plain kerosene
N: kerosene plus 0.1% ***Easy-Aid Chimney Sweep***

	M	N
Color of chimney	**white**	**gray**
Fuel consumed, lb./24 hr.	**1.99**	**1.99**
Condition of wick	**poor**	**poor**
Weight of loose carbon, milligrams	**90**	**90**

Examination of the lamps showed that the kerosene containing the added substance deposited more soot on the chimney and formed about the same amount of deposit on the wick as did the plain kerosene. It was found, too, that starting with a clean chimney, soot was deposited, not removed. This would certainly appear to negative the claim made for the product, "works quickly to help clean out soot, gum sludge."

The copper, presumably present to act as a catalyst in the wick or burner to produce better combustion, and therefore less soot, did not have such an effect in the test lamp. In fact, naphthalene, amines, and soaps would tend to burn with a smoky flame and thus would be expected to cause an increase rather than a decrease in soot formation. As to the claim that the material "conditions the fuel; helps dissolve and remove gum deposits, sludge and water," the product was presumably intended to function through the soaps and amines and naphthalene present in it; the small quantity of the substances present make the benefit doubtful. Besides, "just pouring it into your oil tank" is not enough, and the material would not function as claimed even if larger doses were used. Successful emulsification and/or solution of the substances to be eliminated would require thorough mixing and contact.

One of the claims is that after one removal and cleaning, the wick should require no further cleaning. Actually on the lamp test described, just as many or more "toadstools," "ears," and glowing carbon deposits on the wick were noticed with *Chimney Sweep* as with plain kerosene. In fact, a trimming of the wick was imperative after each 24-hour burning test.

As to the claim of saving fuel, there was no reason to believe that more Btu's would be available through the addition to the oil in the tank of 0.1 percent of its volume in the form of the chemicals found in the analysis.

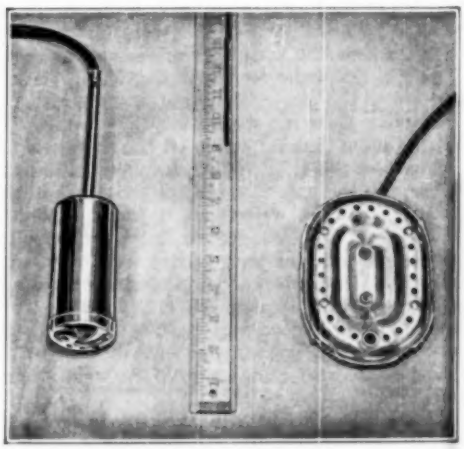
The conclusions of the chemist who conducted the burning test were that the product did not to a measurable or significant extent prevent soot from forming or remove existing soot from oil and kerosene heating and cooking units; that it is not at all likely to save money, fuel and heat, and dissolve and remove gum deposits, sludge, and water. The attention of the close reader is directed to the frequent use of "help" in the claims shown on the can. This is a common technique of an advertiser who would not like to be held to specific, definite, provable claims. The use of such cautious phrasing, which as noted is very common in advertising and labeling of chemical specialties, makes it very difficult to catch up with a company which may be skating close to the limits of toleration in respect to pseudoscientific claims. Readers are advised to watch for this technique in advertising which they read or hear on the radio, for the chances are very great that the idea of helping to do something is a necessary means of escape of the manufacturer from accepting full responsibility of a clear and definite nature for what his product is expected to do, by its purchasers. It might be hard to prove that a product does produce a particular result, and very difficult on the contrary to prove that it does not *help*, in some small degree at least, to produce the claimed results.

Ex-ten "Paint Extender"

A PASTY MATERIAL called *Ex-ten* (E. L. Rahm Co., Chicago 5), when added to water at the rate of one level tablespoonful per gallon, forms a mixture used as a "paint extender"; equal parts of this mixture and of any oil paint, stirred thoroughly together, are claimed to form a "superior oil paint" and to make "any oil paint go twice as far." It appears that *Ex-ten* may be a calcium soap of an organic acid that is strongly surface-active in water; as such it is probably capable of stabilizing the emulsion formed by stirring together oil paint and water. Unfortunately, if the paint is "extended" according to *Ex-ten's* directions, and is then spread over double the area that the original paint would cover, the resulting coating, when dry, is only one-half as thick, and much less durable as well; the result is a poor paint job, for the thickness of paint is one of the major factors determining the durability of the film. Another disadvantage of mixing a proprietary or secret product of one manufacturer with a trade-name brand of another manufacturer is that neither can be expected to accept responsibility for an unsatisfactory result. (The paint manufacturer particularly would be fully justified for taking the position that any such modification of his product must be done on the user's own responsibility.) The idea of "extending" paint was mentioned in a book on painting over 60 years ago, as an undesirable practice used by painters; the method described was to mix whiting and water into an oil paint.

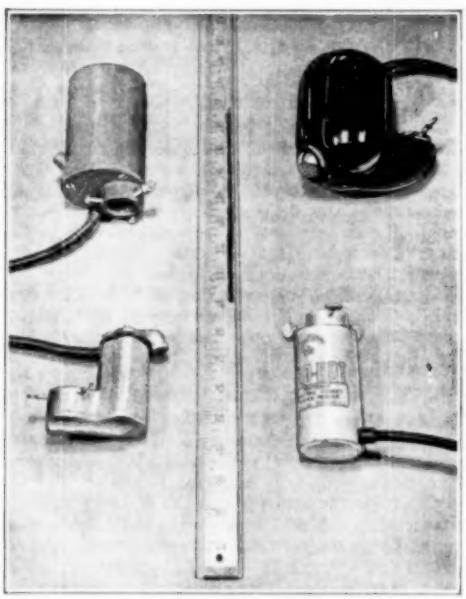
Portable Electric Water Heaters

THERE are several little "gadgets" and household articles which suddenly reappear on sale after a lapse of possibly 10 or 15 years of disuse. They are marketed as something "new" and their announcement together with extensive advertising in newspapers and magazines may often create a big consumer demand for them in a very short time. It is not, however, until a large number of purchasers obtain a knowledge of their unsuitability or worthlessness for their job that sales decline sharply and advertising ceases. The manufacturer then either goes out of business or finds himself another "gadget" to push in mail-order deals, on the radio, or through department stores. After the usual time lapse, and when the public has again forgotten how badly it had been fooled, the original gadget is revived, perhaps with changes in outward appearance, and the procedure is repeated. Most of the small portable electric water heaters now being widely advertised to mail-order buyers fall into the category described. Other examples are battery "dopes" and gasoline-saving gadgets of various sorts for automobiles.



Immersion Type Water Heaters

Right — *Super Lux*; left — *Shobless*.



Faucet Type Portable Water Heaters

Top — *Roley, Thermojet*; bottom — *Kem, Flo-Hot*. (Through error, the unit in the upper left-hand corner of this picture was photographed inverted.)

The small general-utility water heaters mentioned are generally constructed so that they can be fastened onto a water faucet by one or more thumbscrews. The faucet is then turned on and the heater plugged into an electric outlet. The water passing through the device is heated by coming into rather close contact with the heating element enclosed in the device. Another similar sort of water heater which is also widely sold and used at the present time consists of a heating element which is immersed in a vessel of the water to be heated.

In the many advertisements which are seen of these heaters, such claims as "continuous running hot water from your cold water faucet" or "Running hot water in a jiffy from any cold water faucet" or "Exceedingly low cost operation — costs only a few cents a day to use" coupled with pictures which show a *large stream* of steaming-hot running water coming from the device have led many to believe that these heaters are indeed the answer to the hot-water supply problem of many home owners.

Such advertising is, however, quite misleading

for in actuality the amount of water that *can* be heated by one of the gadgets in a minute is very small, and in addition, the large majority of them present a very serious shock hazard and a potential fire hazard besides. Cost of operation is more than three times as high when compared to the more conventional methods using electricity (at off peak-load rates of 1 cent per kilowatt-hour, for example) or from two to five or more times as high as when gas is used for fuel (depending upon the type of gas used and its cost per 100,000 Btu).

If the fastest of these heaters was used to heat a gallon of hot water for use in the home, it would require at the measured rate of flow more than 5 minutes to heat tap water at 60° up to 150° at a cost of more than 0.7 cents. If the slowest of the heaters were used, it would take about 14 minutes to supply the gallon of hot water. (In both instances, the hot water first collected would, of course, cool off a few degrees in the time elapsing before the total quantity needed was ready.) On the other hand, when one uses a water heater with a storage tank, a gallon is available in about 15 seconds, and the cost of heating the water (at usual "off-peak" rates) would be about one-third the cost incurred using either of the small heaters mentioned

A second point of the greatest importance is the very considerable electrical shock hazard presented by most of the heaters. One sort, which was obviously dangerous, is typified by the *Super Lux*, which uses an open and electrically live coil that is immersed in the water container. This immediately makes the water and its container, if of metal, "alive," and if a person had one hand in the water and accidentally touched a good electrical ground such as a water spigot with the other hand or another part of the body, a severe shock (or even electrocution) could be the result. Of course, if used *exactly* as directed, the operator is safe; but a moment's inattention to detail could be fatal, and no consumer should ever assume complete and perfect vigilance in any such matter on the part of everyone in his household. An appliance which inherently involves a shock hazard cannot, of course, be rendered safe by any amount or kind of instructions by the manufacturer to the user, since people differ greatly in age and experience and in ability to comprehend instructions

The faucet-mounting kind of heater, with bare heating elements, such as the *Kem* and *Reley*, are safe enough when clamped to a faucet, but should they become dislodged while operating, they too become very dangerous, since one's instinctive reaction would be to catch the unit as it fell.

In addition to the above-mentioned faults, some of the water heaters draw more current than many home wiring installations are built to carry (much house wiring is adapted to no more than about 15 amperes of current, and little house wiring is safe beyond that figure). The *Flo-Hot*, *Kem*, and *Roley* advised use of a heavier fuse (20 or 25 amperes). Because of this heavy current drain, these appliances cause a considerable voltage drop with average house wiring, below the nominal 118 volts. This is considered very bad practice. Some of the heaters have a tendency to cause clouding in water from a pretreated supply.

CR's Tests

The various tests made and measurements taken included the rate at which water could be heated, measurement of input power, determination of relative efficiency, and a proof-voltage test when possible.

Because of their very limited ability to heat any sizable quantity of water in a reasonably short time, and their general susceptibility to burning-out if operated without a flow of water through them or if the water in which they are immersed boils away, none are rated higher than *B. Intermediate*. The *B-Intermediate* rating, however, does not guarantee that those heaters, so rated, may not in some cases present a shock hazard, and all such devices should be purchased, on the whole, only if approved by Underwriters' Laboratories. Those rated as *C. Not Recommended* (*Thermojet* excepted) were so rated because they were unsafe, electrically, used an excessive amount of electricity from the standpoint of safety of house wiring, or because both faults were present.

All except *Thermojet* (a.c. only) were for operation on 110 volts, ac-dc. Prices quoted were prices at time of purchase.

B. Intermediate

Flo-Hot Portable Electric Faucet Water Heater (Flo-Hot, Inc., 230 Grand St., New York 13) $7.39, plus postage. Faucet type. Input watts, 1100 to 1200. Heating rate, about *1 pint per minute* for a 75°F rise in temperature above the temperature of the water in the pipes. A permanent ground connecting directly to the water pipe would favor increased electrical safety. Electrical leakage (shock hazard), low. 3

Shokless (The Kneisly Electric Co., 490 S. St. Clair St., Toledo 3, Ohio) $6.95. Immersion type. Input watts about 1000 (desirably low). Heating rate, slightly less than that of *Flo-Hot*. Electrical leakage, low. 3

C. Not Recommended

Kem (The Kem Co., 18 E. 41 St., New York City) $3.98, plus postage. Faucet type. Input watts, 1600 to 1750. Heating element uninsulated, and thus appliance is considered potentially dangerous. 1

Super Lux Electric Water Heater (The Lux Co., Inc., Elkhart, Ind.) $4.95. Input watts, 1660. Immersion type. Poorly constructed. Dangerous to use. Claims instant hot water, yet takes 13¼ minutes to heat a gallon of water from 60°F to 200°F. 2

Roley (Roley Heater Co., 15 Spruce St., N.Y.C.) $8.49, postpaid. Faucet type. Input watts, 2100 to 2500, greatly excessive for usual home wiring. Serious shock hazard present. 3

Thermojet (Thermo Electric Corp. of America, 55 W. 42 St., N.Y.C.) $16.81. Faucet type. Construction, elaborate as compared with other units tested, but two samples obtained for test were found defective. Had internal pressure switch which acted to prevent burnout if water was not turned on (a safeguard considered absolutely necessary to make any of these devices suitable for home use). Input watts, 1500. A.c. only. Leakage current, high, but not excessive. When water flow was stopped, water in unit boiled and steam was ejected, an undesirable feature. While this unit was considered relatively safe, electrically, the use of bare heater wires in contact with the water being heated was considered undesirable from a safety standpoint. 3

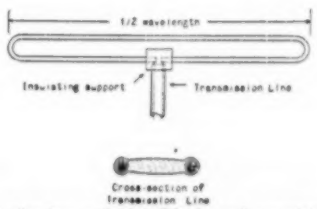
An FM Antenna

THE quality of reception to be achieved with an FM receiver will usually be improved if a separate antenna correctly oriented and mounted inside or outside the home is used instead of a "built-in antenna" (often included in the FM tuner or receiver).[1] The usually preferred type of antenna for good results under average conditions is the "folded dipole." This usually consists of a tubular rod originally roughly 120 in. long, the ends of which are bent back toward the center until they almost touch. The energy collected by the antenna is conducted to the set by a 300-ohm twin-lead transmission line connected to the two ends thus brought close together (see sketch).

Sometimes an outside antenna of desirable design cannot be installed conveniently because of building restrictions imposed by the building or apartment owner, or by cost, or other causes. A "folded dipole" constructed from a length of 300-ohm FM antenna lead-in wire is probably the next best thing.

The *ICA Flexible Folded Dipole Antenna* designed for use in the 88 to 108 megacycle FM band is of this type and was recently studied by CR. It consisted of a length of 300-ohm twin-lead transmission line about 60 inches long including small bakelite card insulators at each end, the net length being about 57 inches. A lead-in of about 10 feet of the same kind of twin lead was furnished.

The dipole part of this antenna could be placed in the attic, or along the room molding, or under a rug. (In such locations, however, it would be less efficient than an antenna mounted a considerable number of feet above a roof, or supported on a pole fastened to a chimney.) The antenna lead-in is connected to the correct binding posts provided on the FM radio or tuner. A metal roof or steel structural elements will be unfavorable to the use of any indoor antenna; and with FM, it sometimes happens that a slight change in position within a building may afford a considerable increase in effectiveness of reception.



Sketch showing a Folded Dipole and associated transmission line. Dimensions are not drawn to scale and are only approximations in that sense.

When installed in the attic and correctly oriented,[2] this antenna gave very good results. It was found equal in effectiveness to a more expensive half-wave outside type of antenna of tubular construction mounted at the same height. With the *ICA* dipole installed under a rug in a room, the directive properties would be maintained, but the reduction in the effective height of the antenna would tend to prevent it from performing efficiently on any except local FM stations, stations within a radius of possibly 20 miles.

B. Intermediate

ICA FM Flexible Folded Dipole Antenna, No. 6008 (Insuline Corp. of America, 36-02 35th Ave., Long Island City 1, N.Y.) $1.95. A folded dipole type of FM antenna considered as efficient as any single element FM antenna, and almost sure to afford a considerable improvement over most FM antennas as "built into" receiving sets.

[1] An antenna built into a receiver is a very unsatisfactory device which may cut signal strength to ½ of its normal value—equivalent to reducing the effective service range of an FM station from 27 miles to 8 miles. Something of the same general objection applies whether the built-in antenna is of the line-cord type or a built-in doublet.

[2] Antennas of this type (dipole or folded dipole) have directional properties and give far better reception if installed so that the section between the insulators runs east and west, for instance, if optimum reception is desired from a station or stations which are located either in a northerly or southerly direction from it. If good reception is desired from stations in both the north-south and east-west direction, it may be necessary to utilize an antenna of the "omnidirectional" type.

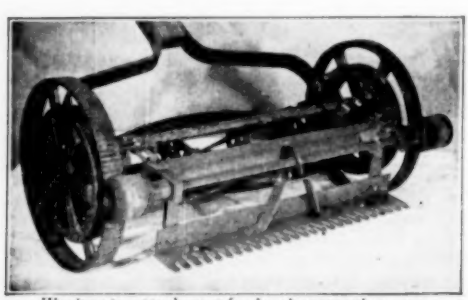
Lawn Mowing Equipment

OVER the past ten years or so, there have been numerous requests for information on the *MontaMower*, which is a lawn-grass-cutting device that has been persistently advertised, usually in small advertisements, in popular magazines. Although the appliance appears to be sold by mail exclusively, almost everyone has seen the advertising and many have wished to know whether it lives up to its maker's rather unusual claims of convenience, ease of operation, and performance.

The cutting mechanism consists of eight pairs of sharp-edged cutting disks, mounted so that they overlap slightly on a steel back plate. Nine toothed driving wheels furnish the turning force as the mower is pushed over the lawn.

The mower is radically different from the standard- or conventional-type mowers, whence it appeared that the only useful test would be comparison with ordinary mowers of its effectiveness in cutting grass. The lawn used was a grass plot consisting of blue grass, clover, and Chewing's fescue, with considerable quack grass in some areas. The mower was also tried on uncut prairie grass and on recently seeded areas of lawn.

An obvious advantage of the *MontaMower* was its light weight (8¼ lb.). Other than that, the device was considered not to live up to its claims; for example, that this "live precision made mechanism . . . first gathers, then cuts smoothly a clean 16" swath through grass, dandelions, spike grass, lawn weeds." The *MontaMower* did not produce a smooth even job the first time it was used over the test lawn, and it was apparent the manufacturer was aware that this would be the common experience with users, as the instruction pamphlet carries a long explanation as to why results of the first mowing might be unsatisfactory. The gist of the explanation seems to be that the lawn grass had by use of another type of mower been trained to grow at the wrong angle, which made it difficult for the *MontaMower* to do an effective job.



Weedmaster attachment for hand-operated mower.

To produce a cut equal to that of a conventional mower, it was necessary either to go over the lawn three or four times, or to pull the *MontaMower* to and fro in short strokes like a vacuum cleaner in order to obtain satisfactory results. With the new *MontaMower*, cutting action was satisfactory in very dense, recently seeded grass, but cutting of tall stalks, such as dandelion and other similar weeds, was not effective, as many escaped the cutter, especially if growing at an angle. The circular which came with the mower (but unfortunately not the advertising upon the basis of which it was bought) stated quite clearly that the *MontaMower* "is designed for lawns and cannot operate in rough, sandy ground composed of wild grass and weeds, nor in wet, soft ground, because such conditions do not provide traction for the drive wheels." This statement of the manufacturer was surely well substantiated in the test. With wet soil, dirt and clippings were carried from the driving wheels into the cutting heads, which then tended to jam. The appliance did not gather in and cut every blade of grass as claimed in the operating pamphlet which says, "It trims neatly while it cuts and relieves you completely of this laborious lawn task after your lawn is cut."

The *MontaMower* was subject to serious jamming by twigs and twine which caught in the cutters. The obstructions were hard to extricate, and the user could be painfully cut in the attempt if not very careful.

Altogether, it is our judgment that the *MontaMower* is not practicable for use on most home lawns, particularly because it lacks the adaptability of the old-fashioned mower which can do a fairly good job under varying conditions.

Apparently there has been much dissatisfaction with *MontaMowers* in use, for they are sold with a guarantee that if the purchaser finds the *MontaMower* unsuited to his needs, it can be replaced by

a standard-type mower. There is a choice of models between the *Certified C-600* priced at $26 and the *Homko L-100* at $31, each offered with a $3.50 discount to compensate the purchaser for any inconvenience with the *MontaMower*. With the discount, the cheaper model is an even trade for the *MontaMower* and the *Homko L-100* requires a $5 extra payment.

The *MontaMower* tested by CR's engineer was returned with $5 for replacement with the *Homko L-100*. This was tested in the same manner as the other standard-type mowers reported in the July 1948 BULLETIN and, while of decidedly mediocre grade in spite of its high price, was judged worthy of a *B-Intermediate* rating, since it was slightly better than the *Coldwell Mohawk* ($20.95).

The purchaser is unfortunately unable to check upon the promoter's claim that the cog-driven wheels of the *MontaMower* agitated the sod and put new life into it, and the manufacturer's inference is that *MontaMower's* very action makes lawns healthier and more attractive, for while he expects this improvement to be noticed after one year's use of the mower, his *guarantee* is based on a total approval period (including time from and to the factory) of 30 days only. It is felt no weight need be given this type of claim unless supported by opinions of qualified agronomists, agricultural experts trained in problems of crop and plant growing. The terms of sale should be read closely, for they are very strict, and the manufacturer evidently means to enforce them to the letter: ". . . approval is strictly limited to 30 days from the date of shipment to the date on which it is received back at the factory. This allows one week in transit to reach the customer, two weeks in his possession, and one week for its return. *Positively No Exceptions.*"

The technique of selling and guaranteeing this mower is an unusual one, and from the promoter's standpoint must be regarded as rather clever. It does not provide that the dissatisfied purchaser will get a full cash refund; if dissatisfied with the lawn mower, he merely gets a chance to buy either one of two mowers of a conventional kind, both overpriced, but one on an even exchange when a "discount" of $3.50 is allowed for. (The manufacturer also reserves the right to refund the purchase price less a packaging and handling charge of $3 if the *MontaMower* is returned in good condition, in case he cannot supply the conventional mower.)

It is perhaps significant that the manufacturer's literature explains that he will not supply names and addresses of satisfied *MontaMower* users; that "The only way" to determine the extent to which the *MontaMower* will serve your purpose "is to use it on your lawn."

Ratings are cr49.

B. Intermediate

Homko L-100 (Western Tool & Stamping Co., Des Moines; distributed by MontaMower Distributing Co., Grand Rapids 2, Mich.) $31 ($5 plus a *MontaMower*). Weight, 38 lb. Width of cut, 16½ in. Was not in good operating condition as received, as the reel-knife contact was set up so tight that the mower could be pushed forward only with very great effort; in an attempt to readjust the mower, it was found that contact between the fixed knife and the rotating blades was irregular. Bed-knife adjusted by two hexagonal head cams, locked with bolts, simple to use but subject to some loss of motion. Cutting height adjustment range, ½ to 2-5/16 in. (satisfactory). Reel and bed-knife of satisfactory hardness; pawl, soft; pinions and drive gears, die cast. Medium hard to push with correct setting of reel-knife. Considered overpriced for the quality afforded. **3**

C. Not Recommended

MontaMower (MontaMower Distributing Co., Grand Rapids 2, Mich.) $22.50, plus transportation. Cutting effectiveness was found poor in comparison with conventional mowers on an ordinary midwestern level lawn. One engineer who attempted to use the *MontaMower* but did not find it satisfactory considered that there might be some types of lawn at some periods of the year on which the *MontaMower* would work satisfactorily; nevertheless, in his own experience and that of his neighbors who had tried it, it was not found to be a generally satisfactory lawn-mowing device. Others with whom CR has discussed the mower, including members of its own staff, confirm the report that several to-and-fro strokes are required before an area is cut satisfactorily; they went much further in their criticism of the device and considered it practically unsuitable for use on their lawns. One commented that a straight, continuous operation as with an ordinary mower is practically impossible, since the unit jammed in his use of it after about 6 or 8 ft. of movement. Because of easy handling, light weight, and the reduction in amount of hand trimming it makes possible, this machine might warrant a *B-Intermediate* rating for use under the particular circumstances where its good points can be utilized to advantage. **3**

Lawn Mower Attachment

C. Not Recommended

Weedmaster (Sold by Harman Distributors, Inc., P.O. Box 923, New Haven, Conn.) $8.95. An attachment for 16- and 18-in. lawn mowers, intended to cut dandelions and other tall weeds which are not cut by the usual lawn mower. The *Weedmaster* hooks over the tie rod of the mower and consists of a sickle-bar which is driven by two small rollers which make frictional driving contact with the tires of the lawn mower wheels. The device was tried by CR and found unsatisfactory. A major difficulty was that its weight threw the mower out of balance, causing the sickle-bar to dig into the ground; the result was that the unit became detached from the mower.

Breaking In a New Car

MANUFACTURERS' recommendations to the consumer for breaking-in their cars vary considerably. Some will recommend limiting speed to 25 or 35 miles per hour for the first 500 miles; some recommend a gradual stepping up of maximum speed as the accumulated mileage on the car is increased; while others have issued no instructions, the assumption is that their cars can be driven at high speed from the start. In general, the manufacturer's recommendations regarding the speed at the various points of the break-in period should be carefully followed, or rather, the recommended limiting speeds not exceeded, first, because the manufacturer of a car is not so likely as others might be to recommend a procedure that would be likely to affect adversely the life or operation of his car to any great extent. Second, his engineering experience fits him best to make the recommendations[1] because of his knowledge of the clearances between the various moving parts, types of finish used on bearings, amount of factory run-in, etc. These, along with the tvpe of lubrication system used in the engine, all play a part in the manufacturer's decision as to the most practicable procedure for the average consumer to use in breaking in a car of a given make. Since the manufacturer's practices relative to details of design, to machining and finishing of the surfaces, to types of piston rings, pistons, etc., and to materials are changed frequently, be sure the manufacturer's break-in recommendations refer to the specific new car in question.

We do feel that an exception to the general principle of following the manufacturer's directions should probably be made in the case of those manufacturers who say that no breaking-in procedure is necessary with their car, or that it can be driven at high speed from the first. Where long life with minimum repair costs of a car is an object, as it is for most people, we think that a more conservative approach to the driving of a new car would be in order. Some experts are of the opinion that *changes of speed* in the break-in period are desirable, because an engine broken-in at a low speed still requires breaking in at higher speeds. The procedure they have recommended, so far as road conditions and exigencies of driving will permit, is as follows:

1. Drive for a short period at speeds below 35 m.p.h. until the car is thoroughly warmed up (i.e., until jacket water temperature is up to normal).

2. Increase speed to 40 m.p.h., but every half mile speed up to 50 m.p.h. and immediately decelerate to 40 m.p.h. without disengaging the clutch.

3. Continue at 40 m.p.h. or less for the next half mile and repeat according to Paragraph 2.

4. If the engine tends to labor on hills or bad roads, safety in operation demands use of the second gear for speeds up to around 30 m.p.h.

5. It is probably best to use the overdrive only to a limited extent, especially during the early part of the break-in period, as the engine is more heavily loaded when the overdrive is engaged.

The theory behind this procedure is that when the car speed is increased to 45 or at most 50 m.p.h. the load on the bearing surfaces is increased; this helps to break them in, but as the high loading is continued only for a short period, the danger of overheating and scoring is minimized. Then when the car is decelerated, the higher vacuum created helps to draw oil up past the rings, providing additional lubrication and cooling. At all times the temperature indicator should be closely watched. At the slightest sign of overheating of the cooling water, car speed should be reduced or the engine shut off, if temperature remains above normal. If the engine develops any abnormal sound, the car should be stopped immediately and the nearest dealer of the make of car bought should be advised. Oil pressure should also be watched and the car stopped at once if the pressure is found to be much lower than normal.

Other experts do not consider this method fully desirable, or at least would confine it to driving in open flat country; they feel that in rolling country, pulling up hills, and running down hill with unloaded engine, and stops and accelerations in traffic tend to furnish the variations in load needed to break the engine in properly. It is also considered that the method of driving described in Paragraphs 1, 2, and 3

[1]This of course cannot be valid as to the cars made by manufacturers who permit their new cars to be driven at speeds from 50 to 70 miles per hour in making deliveries to dealers. Subscribers would probably be wise to confine their purchase of automobiles, so far as practicable, to makes whose dealers get their shipments by trailer-trucks or car-carriers.

(increasing and decreasing speed) implies a hazard to the car owner and to other drivers; it is felt, indeed, that motorists frequently pay too much attention to their speedometers and not enough to road conditions and to the position and speed of other cars on the road.

The purpose of any break-in period is to put the engine and, to some extent, other parts of the running gear into such a condition that when the car is subsequently used under normal or exceptional use, there will not be scuffing, abrading, or other abnormal damage to the reciprocating and rotating parts. "Super-finish" or "micro-finish" as used on crankshaft main bearings, etc., permits fitting of wearing parts with smaller clearances than can be used with bearings not so finished, without danger of damage to finished surfaces. On the other hand, manufacturers not using "super-finish" must either fit their bearings more loosely (which is not desirable from the standpoint of long life), or take a chance on fitting them as tightly as "super-finished" bearings, so that after the break-in period the clearances will turn out to be approximately the same as with "super-finished" bearings. (On pressure-lubricated engines, bearings are not fitted closely.)

During the breaking-in period a "light" (low viscosity) oil such as SAE 10 should be used, even in summer, because the light oil will flow more freely to the cylinder walls than a more viscous (or heavy) oil.

Many cars come through from the factory with a special low-viscosity oil (lighter than SAE 10) in the crankcase. Dealers leave this in, changing to SAE 10 at 300 miles or less. Oil consumption will be abnormally high with these light oils, and it is often necessary to add No. 10 oil to keep the oil at its maximum level during the first 300 miles.

The first oil change should be made at 500 miles, preferably at 300 miles, because the inside of the engine may have an accumulation of chips of steel, iron, and other metallic materials, dirt, sand, etc., which were not completely removed after the machining of the engine block. This foreign matter tends to find its way into the crankcase, where most of it will be carried out when the crankcase is drained. (The draining should always be done when the oil is hot as, for example, at the end of a trip.) Oil should be kept to the maximum indicated crankcase level at all times; the level should be checked every 100 miles.

It is most important that the engine should never be raced during the break-in period. It should always be allowed to warm up gradually, and not run at a speed much above idling speed at any time during the warm-up. The oil pressure should be checked, of course, to be sure it is normal before the car is driven. Very low oil consumption is not necessarily to be expected during the break-in period; it takes time for the piston rings to become fully seated and make a tight seal against the cylinder walls.

Fast stops should not be attempted for the first few hundred miles; the brake linings and drums, like the engine and transmission parts, need time to become properly bedded in.

Off the Editor's Chest

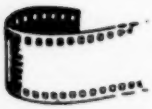
(*Continued from page 2*)

oils which made them better adapted to serve for a long mileage between changes than other standard lubricating oils.) This advertising did serve to show that oil companies had come to recognize that consumers were far better informed with respect to the wastefulness of frequent oil changes than they had been in the period when advertising and common practice favored oil change at every 500 miles or so.

Now at long last, in December 1948, comes along an official government release from the Bureau of Federal Supply of the Treasury Department which, in the interest of proper maintenance of all government passenger cars, trucks, and buses, "re-evaluates" previous advice concerning the use of lubricating oils, and recommends change of oil only in the spring and fall or at 4000-mile intervals, whichever comes first.

"Hasn't it been about 15 years since you found that out and published it?" asked a long-time follower of CR's activities, writing to call our at-

(*Concluded on page 28*)



Ratings of Motion Pictures

THIS section aims to give critical consumers a digest of opinion from a wide range of motion picture reviews, including the motion picture trade press, leading newspapers and magazines—some 19 different periodicals in all. The motion picture ratings which follow thus do not represent the judgment of a single person, but are based on an analysis of critics' reviews.

The sources of the reviews are:

Box Office, Charm, Chicago Daily Tribune, Cue, Daily News (N.Y.), *The Exhibitor, Harrison's Reports, Motion Picture Herald, National Legion of Decency List, Newsweek, New York Herald Tribune, New York Times, Parents' Magazine, Release of the D.A.R. Preview Committee, Successful Farming, Time, Variety* (weekly), *Weekly Guide to Selected Motion Pictures* (National Board of Review of Motion Pictures, Inc.), and *Unbiased Opinions of Current Motion Pictures* which includes reviews by the General Federation of Women's Clubs, the American Legion Auxiliary, National Film Music Council, and others.

The figures preceding the title of the picture indicate the number of critics who have been judged to rate the film A (recommended), B (intermediate), or C (not recommended) on its entertainment values.

Audience suitability is indicated by "A" for adults, "Y" for young people (14-18), and "C" for children, at the end of each line.

Descriptive abbreviations are as follows:

adv—adventure
biog—biography
c—in color (Technicolor, Cinecolor, Trucolor, Magnacolor, Vitacolor, etc.)
car—cartoon
com—comedy
cri—crime and capture of criminals
doc—documentary
dr—drama
fan—fantasy
hist—founded on historical incident
mel—melodrama
mus—musical
mys—mystery
nov—dramatization of a novel
rom—romance
soc—social-problem drama
trav—travelogue
war—dealing with the lives of people in wartime
wes—western

A	B	C		
—	14	3	**Accused, The**	*cri-mel A*
—	—	—	**Act of Murder, An (See Live Today for Tomorrow)**	
1	8	5	**Act of Violence, An**	*war-mel A*
—	8	4	**Adventures of Don Juan**	*adv-c A*
—	1	2	**Affairs of a Rogue, The**	*hist-dr A*
—	3	—	**Alaska Patrol**	*mel AYC*
—	4	3	**Alias Nick Beal**	*fan A*
—	3	4	**Angel in Exile**	*mel A*
—	1	7	**Angel on the Amazon**	*dr A*
—	—	7	**Angry God, The**	*dr-c A*
1	11	1	**Apartment for Peggy**	*dr-c A*
—	1	3	**Appointment With Murder**	*cri-mel A*
—	—	3	**Arkansas Swing, The**	*mus-com AYC*
—	2	2	**Back Streets of Paris**	*mel A*
—	—	3	**Back Trail**	*wes AYC*
2	4	1	**Bad Boy**	*dr AYC*
—	5	1	**Badmen of Tombstone**	*wes A*
—	4	2	**Behind Locked Doors**	*mel A*
—	4	8	**Belle Starr's Daughter**	*wes A*
—	2	1	**Bells of the Old City**	*com-c A*
—	4	3	**Black Eagle**	*dr A*
—	2	3	**Blazing Across the Pecos**	*mus-wes AYC*
—	3	5	**Blondie's Secret**	*com AYC*
—	10	5	**Blood on the Moon**	*wes A*
—	4	6	**Bodyguard**	*mel AY*
—	3	2	**Borrowed Trouble**	*wes AYC*
—	2	2	**Boston Blackie's Chinese Venture**	*cri-mel AY*
—	7	8	**Boy with Green Hair, The**	*fan AYC*
—	5	5	**Bribe, The**	*cri-mel A*
—	1	6	**Bungalow 13**	*mys-mel A*
—	5	2	**Canterbury Tale, A**	*dr A*
—	1	4	**Caught**	*dr A*
—	6	1	**Cesar**	*dr A*
—	11	4	**Chicken Every Sunday**	*com A*
—	4	3	**Chips Are Down, The**	*nov A*
—	2	2	**Clay Pigeon, The**	*mel A*
—	5	4	**Code of Scotland Yard**	*cri-dr A*
2	10	1	**Command Decision**	*war-dr AY*
—	4	3	**Corridor of Mirrors**	*dr A*
—	3	7	**Countess of Monte Cristo, The**	*mus-com A*
—	1	5	**Creeper, The**	*mel A*
—	5	4	**Criss Cross**	*cri-mel A*
2	12	3	**Cry of the City**	*mel A*
—	10	2	**Dark Past, The**	*cri-mel A*
—	1	2	**Dead Don't Dream, The**	*wes AYC*
—	3	9	**Decision of Christopher Blake, The**	*dr A*
—	1	2	**Denver Kid, The**	*wes AYC*
—	3	1	**Desperadoes of Dodge City**	*wes AYC*
1	3	2	**Don't Take It to Heart**	*com AYC*
—	3	—	**Down to the Sea in Ships**	*mel AY*
—	7	3	**Dulcimer Street**	*dr A*
—	2	5	**Dynamite**	*mel AY*
—	3	5	**Eagle With Two Heads, The**	*dr A*
—	2	2	**Easy Money**	*com A*
—	6	5	**Embraceable You**	*cri-mel A*
3	9	3	**Enchantment**	*dr A*
—	—	4	**Eternal Husband, The**	*dr A*
—	11	5	**Every Girl Should Be Married**	*com AY*
—	—	4	**False Paradise**	*wes AYC*
—	7	2	**Family Honeymoon**	*com AYC*
—	4	—	**Far Frontier, The**	*mus-wes-c AY*
—	—	4	**Feathered Serpent, The**	*mys AY*
—	11	4	**Fighter Squadron**	*war-mel-c A*
—	1	4	**Fighting Back**	*mel AYC*
—	7	1	**Fighting O'Flynn, The**	*nov-c AY*
—	2	5	**Flaxy Martin**	*dr A*
—	—	3	**Foolish Husbands**	*com A*
—	8	9	**For the Love of Mary**	*mus-com AY*
—	5	8	**Force of Evil**	*cri-dr A*
—	5	2	**Four Steps in the Clouds**	*com A*
—	6	6	**Gallant Blade, The**	*mel-c AYC*
—	2	6	**Gentleman from Nowhere, The**	*mys A*
—	2	7	**Girl from Manhattan, The**	*com AY*
—	1	3	**Golden Eye, The**	*cri-mel AY*
—	4	1	**Grand Canyon Trail**	*mus-wes AYC*
—	1	3	**Gun Smugglers**	*wes AYC*
—	—	4	**Gunning for Justice**	*wes AYC*
—	—	6	**Harpoon**	*mel A*
—	13	1	**He Walked By Night**	*cri-mel A*
—	6	2	**Henry, the Rainmaker**	*com AYC*
—	2	1	**Her Man Gilbey**	*com A*
—	4	5	**High Fury**	*dr A*
—	3	1	**Highway 13**	*mel A*
1	11	4	**Hills of Home**	*dr-c AYC*
—	2	4	**Homicide for Three**	*mys-mel A*
—	—	4	**Honorable Catherine, The**	*com A*
—	1	3	**I Cheated the Law**	*cri-dr A*
—	5	—	**I Shot Jesse James**	*mel A*
—	4	3	**I Surrender Dear**	*mus-com AY*
—	3	3	**In This Corner**	*mel A*
—	4	2	**Incident**	*mel AY*
—	5	1	**Indian Agent**	*wes AYC*
—	—	4	**Inner Sanctum**	*mys-mel A*
—	6	9	**Innocent Affair, An**	*mus-com A*
—	—	5	**Interlude**	*dr A*
—	—	4	**It Always Rains Sunday**	*dr A*
—	2	2	**Jiggs and Maggie in Court**	*com AYC*
8	8	2	**Joan of Arc**	*dr AY*
—	10	5	**John Loves Mary**	*com A*
2	14	2	**Johnny Belinda**	*dr A*
1	13	6	**Julia Misbehaves**	*com A*
1	11	3	**June Bride**	*com A*

A	B	C		
—	—	4	Jungle Goddess	*dr AYC*
—	2	3	Jungle Jim	*mel AY*
1	8	1	Jungle Patrol	*war-mel A*
—	—	5	Just William's Luck	*com A*
—	7	2	Kidnapped	*mel AYC*
—	—	3	King of the Bandits	*wes AYC*
—	5	6	Kiss the Blood off My Hands	*cri-mel A*
—	9	5	Kissing Bandit, The	*mus-com-c A*
—	3	3	Ladies of the Chorus	*mus-com A*
1	9	4	Larceny	*mel A*
—	5	—	Last of the Wild Horses	*wes-c A*
—	3	5	Leather Gloves	*mel A*
—	4	9	Let's Live a Little	*com A*
—	14	2	Letter to Three Wives, A	*dr A*
1	4	1	Life of Riley, The	*com AYC*
2	7	9	Live Today for Tomorrow	*dr A*
—	4	—	Loaded Pistols	*mus-wes AYC*
—	4	2	Long is the Road	*propaganda-dr A*
5	8	—	Louisiana Story	*mus-doc AYC*
—	1	2	Loves of Casanova	*mus-dr A*
—	1	5	Loves of Don Juan, The	*dr A*
—	10	5	Luck of the Irish, The	*fan AYC*
—	1	10	Lucky Stiff, The	*cri-com A*
—	9	6	Luxury Liner	*mus-com-c AYC*
1	3	7	Macbeth	*dr AY*
—	5	2	Man About the House, The	*mel A*
—	10	5	Man from Colorado, The	*wes-c AY*
—	2	3	Manhattan Angel	*mus-com AY*
—	—	3	Mark of the Lash	*wes AYC*
—	2	4	Marriage in the Shadows	*war-dr A*
—	2	2	Marshal of Amarillo	*wes AYC*
—	3	1	Merry Chase, The	*com A*
—	6	6	Mexican Hayride	*com A*
—	2	4	Million Dollar Weekend	*mus-mel A*
—	2	3	Miraculous Journey	*mel-c AYC*
—	4	1	Miranda	*com A*
—	12	2	Miss Tatlock's Millions	*com A*
—	1	5	Mlle. Désirée	*dr A*
—	8	1	Monsieur Vincent	*dr A*
—	3	3	Monte Cassino	*war-dr AY*
—	2	6	Moonrise	*dr A*
—	2	4	Mozart Story, The	*mus-dr A*
—	7	2	Mr. Perrin and Mr. Traill	*dr A*
—	4	4	Murderers Among Us	*war-dr A*
—	—	3	My Brother's Keeper	*mel A*
—	3	11	My Dear Secretary	*com A*
—	4	11	My Own True Love	*war-dr A*
—	5	—	Night Time in Nevada	*mus-wes-c AYC*
—	6	4	Night Wind	*dr AY*
—	6	8	No Minor Vices	*com A*
—	1	3	Old-Fashioned Girl, An	*mus-dr AYC*
—	3	—	Olympic Cavalcade	*doc AYC*
—	2	3	One Night With You	*mus-dr AY*
—	3	8	One Sunday Afternoon	*mus-com-c A*
—	7	9	One Touch of Venus	*mus-fan A*
—	1	5	Out of the Storm	*mys-mel AY*
—	—	3	Outlaw Brand	*mus-wes AYC*
—	14	6	Paleface, The	*mus-com-c A*
—	1	5	Parole, Inc.	*cri-mel A*
—	3	3	Piccadilly Incident	*war-dr A*
1	10	4	Pitfall, The	*mel A*
—	4	2	Place of One's Own, A	*mys-dr A*
—	1	4	Plot to Kill Roosevelt, The	*cri-mel A*
—	6	4	Plunderers, The	*mus-wes-c A*
—	6	2	Portrait of Jennie	*dr-c A*
—	1	3	Prairie, The	*hist-nov A*
—	2	5	Private Life of An Actor	*biog A*
—	5	2	Quiet One, The	*doc A*
—	5	1	Quiet Weekend, A	*dr AY*
—	8	7	Rachel and the Stranger	*mus-dr A*
—	2	5	Racing Luck	*dr AYC*
—	—	3	Range Renegades	*mus-wes AYC*
—	—	5	Rangers Ride, The	*mus-wes AYC*
—	6	—	Red Canyon	*wes-c AY*
—	2	3	Red Pony, The	*dr-c A*
2	8	5	Red Shoes, The	*mel-c AY*
—	7	5	Return of October, The	*com-c A*
—	4	—	Return of Wildfire, The	*wes-c AYC*
—	8	7	Road House	*mus-mel A*
—	8	5	Rogue's Regiment	*war-mel A*
—	3	3	Room Upstairs, The	*dr A*
—	11	6	Rope, The	*cri-dr-c A*
—	1	5	Rose of the Yukon	*mel AYC*
—	—	3	Rossini	*mus-biog A*
—	4	3	Rusty Leads the Way	*dr AYC*
—	2	5	Ruy Blas	*hist-dr AY*
1	9	8	Saxon Charm, The	*dr A*
—	7	11	Sealed Verdict	*war-dr A*
5	8	—	Secret Land, The	*doc-c AY*
—	—	3	Secrets of a Ballerina	*dr A*
—	3	1	Shep Comes Home	*dr AYC*
—	5	3	Shockproof	*mel A*
—	1	4	Singin' Spurs	*mus-wes AYC*
—	2	1	Sinister Journey	*wes AY*
—	1	8	Siren of Atlantis	*fan A*
—	5	3	Slightly French	*mus-com-c A*
—	1	7	Smart Girls Don't Talk	*cri-mel A*
—	2	1	Smoky Mountain Melody	*mus-wes AYC*
—	2	2	Smugglers' Cove	*mel AY*
4	8	8	Snake Pit, The	*mel A*
—	1	2	Snowbound	*dr A*
2	11	4	So Dear to My Heart	*mus-car-c AYC*
—	9	2	Sofia	*mus-mel-c A*
—	2	1	Son of God's Country	*wes AYC*
—	8	9	Song is Born, A	*mus-com-c A*
—	1	2	Song of India	*mel AYC*
—	1	3	Sons of Adventure	*mys-mel AY*
—	11	7	Sorry, Wrong Number	*mel A*
—	4	1	S.O.S. Submarine	*war-doc AY*
—	8	6	Southern Yankee, A	*com AYC*
—	—	5	Spirit and the Flesh, The	*nov A*
—	3	2	State Department—File 649	*mel-c A*
—	11	3	Station West	*mus-mel A*
—	1	2	Strange Gamble	*wes AYC*
—	—	6	Strange Mrs. Crane, The	*cri-mel A*
—	2	4	Strange Victory	*doc A*
—	2	4	Street Corner	*dr A*
—	3	2	Streets of Laredo	*wes-c A*
—	5	—	Strike It Rich	*dr A*
—	5	1	Sun Comes Up, The	*mus-dr-c AYC*
1	7	3	Symphonie Pastorale	*dr A*
—	1	2	Symphony of Life	*mus-dr-c A*
—	2	2	Take My Life	*mys-mel A*
—	3	5	Tarzan's Magic Fountain	*fan AYC*
—	7	8	That Wonderful Urge	*com A*
—	1	11	This Was A Woman	*dr A*
—	8	8	Three Godfathers	*wes-c A*
2	9	4	Three Musketeers, The	*dr-c AY*
—	1	2	Thunder in the Pines	*mel A*
—	2	3	Tragic Hunt	*dr A*
—	2	2	Trail to Laredo	*mus-wes AYC*
—	—	3	Triggerman	*wes AYC*
—	1	7	Triple Threat	*dr AYC*
—	2	2	Trouble Preferred	*mel A*
—	3	2	Troublemakers	*com AYC*
—	9	7	Unfaithfully Yours	*com A*
—	2	3	Unknown Island	*dr-c A*
—	3	6	Untamed Breed, The	*wes-c A*
—	2	5	Urubu	*adv A*
—	—	5	Vacation Days	*mus-wes AYC*
—	1	4	Valiant Hombre, A	*mel AYC*
—	3	7	Variety Time	*mus-com AY*
1	7	4	Wake of the Red Witch	*adv AY*
—	10	2	Walk a Crooked Mile	*mel A*
—	3	3	Waterloo Road	*war-dr A*
—	2	4	What's on Your Mind	*doc A*
—	1	3	When Love Calls	*mus-dr A*
—	12	4	When My Baby Smiles at Me	*mus-com-c A*
—	2	4	Where Words Fail	*mus-dr A*
—	4	8	Whiplash	*mel A*
1	8	5	Whispering Smith	*mel-c AY*
—	—	3	Without Prejudice	*dr A*
—	1	3	Woman in the Hall, The	*dr A*
—	1	5	Woman's Secret, A	*mus-mel A*
1	8	6	Words and Music	*mus-com A*
—	12	4	Yellow Sky	*wes A*
—	14	2	You Gotta Stay Happy	*com A*

Off the Editor's Chest

(*Continued from page 25*)

tention to the announcement, which had been treated as top news on the radio. "And," he continued, "wouldn't American motorists have saved something like a billion dollars if they had followed CR's advice — to say nothing of the resulting conservation of the nation's oil?"

One of our mathematically-minded staff members got out his slide rule and figured that, with oil at 30 cents per quart, a CR subscriber who followed our advice when it was first issued would have saved approximately $170 on his oil purchases — or more than three times as much, it may be remarked, as it would have cost to pay for his subscription to CR from January 1930, to date. At the present time, on account of today's far higher average driving speeds, the saving would be considerably greater, because oil is more rapidly consumed at high speeds, and mileage is accumulated much faster than in the days when the cars gave a slow and relatively bumpy and noisy ride. Assuming about 32 million automobile owners, the amount of money that might have been saved by not wastefully discarding crankcase oil, if the government had been more prompt in giving public notice to its knowledge on the subject, would have run to somewhere near five billion dollars, and the cause of conservation of dwindling oil reserves would have been greatly advanced.

We have a sizable file of letters from subscribers who cite specific cases in which by following CR's recommendations they have been able to save considerable sums on their purchases, or where they have failed to follow CR's advice and been sorry—often to the extent of several hundred dollars spent on the wrong washing machine, dishwasher, or other major household appliance or equipment. It is not often, however, that we have so striking an example of how our findings, which at first seem startlingly radical and off the beaten path, gradually come to be the accepted and approved practice. "You should brag like anything," wrote our correspondent, "about being 15 years ahead of the times." Our natural modesty will not permit us to go that far, but it is something that in a quiet moment we like to think about, particularly when we contemplate the slow processes by which public bodies commonly reach a decision on questions of such vital importance to conservation of national resources, not to mention consumers' pocketbooks.

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†*indicates that listings of names or brands are included*

The Consumers' Observation Post

(*Continued from page 4*)

gardens, where the rows of different vegetables are close together, it might easily turn out that a chemical eradicator that would weed a row of carrots successfully would also kill beets on one side and tomato plants on the other.

* * *

SELLING, SHIPPING, OR STORING CONTAMINATED, FILTHY FOOD is a violation of the federal Food, Drug, and Cosmetic Act. Food and Drug Administration inspectors, when they have smelled out something bad, as Food Field Reporter puts it, are required by law to seize the unfit food. It appears, however, that following early practices of food law enforcement, inspectors first send to Washington for approval before confiscating the offending substance. It ordinarily takes one to two weeks, according to Food Field Reporter, before an O.K. comes through, and in the meantime a fly-by-night operator can go right on selling contaminated food. The journal suggests that more authority to make routine seizures should be delegated to field stations. In the light of the present trend to center all power and initiative in Washington, the magazine is very likely sponsoring a lost cause.

* * *

MOTORISTS are needlessly spending millions of dollars on the purchase of premium gasoline when the great majority of passenger cars now in use function efficiently on regular grade fuel, reported E. Ray Cory, chairman of the A.A.A.'s Consumer Relations Committee to the 1948 annual meeting of the American Automobile Association. That will be no news to many CR subscribers of long standing, for, as far back as 1942, CR advised subscribers that even the third-grade gasoline of that period could be used in most modern cars with only a slight knock, by proper adjustment of the spark advance. More recently, the Bureau of Federal Supply has in the interests of economy forbidden the use by government agencies of premium grade gasoline in standard automobiles and trucks. It is pleasant to see our ideas catching on.

Just to remind you to place your advance order for

CR's 1949-50 *Annual Cumulative Bulletin*

scheduled for September 1949!

THE ANNUAL CUMULATIVE BULLETIN provides a convenient 200-page summary of a wide range of CR's previous findings (up to June 1949), fully indexed, and grouped under such headings as Household Appliances and Equipment; Radio Sets and Phonograph Supplies; Textiles and Clothing; Home Building, Maintenance and Repair; Heating Equipment and Fuel; Automobile Care, Accessories and Supplies; Cosmetics and Toilet Supplies. In addition, it presents much new and interesting material that has not previously appeared in any CR Bulletin.

THE ANNUAL CUMULATIVE BULLETIN is not included in a subscription, but is sent on special order, which should be accompanied by remittance. Since it is a confidential issue, it is available only to private individuals for their personal use and that of their immediate families.

For convenient order blank, please turn this page.

FROZEN VEGETABLES taste just as well and have as high a vitamin content when they are frozen very slowly in the home freezer as when they are quick-frozen commercially, according to experiments made at the New York State Agricultural Experiment Station, over a six months' period of storage. Six judges who sampled the various vegetables frozen by both methods could detect no difference in the taste of lima beans and corn; little difference in spinach and asparagus. There were some differences in the texture of the latter.

* * *

RECENTLY TESTED:

RC Dry-Wash Hand Cleanser, which sells for $1.25 in 2-lb. cans, is a creamy gelatinous paste sold for removing oil, paint, grease, grime, tar, and printer's ink from the hands. The estimated composition of this product upon analysis was 50% Stoddard Solvent (a high flash point petroleum distillate), 32% water, 9.5% stearic acid, 4% triethanolamine, 2.4% Hexalin (a fat solvent which should help remove oil), and 2% lanolin. RC is to be used without water, according to the directions, and the label claims that regular use will leave the skin soft and smooth and will prevent chapping by preserving the natural skin oils. It would seem evident that such a cleaner cannot be used regularly without risk of harm to the hands, for it is well known that such substances as petroleum distillate, which dissolve fats, will remove a part of the natural fat from the skin, and thus contribute to skin irritation.

Kwik-Twst Paper Drill (The Smead Mfg. Co., Hastings, Minn.), $1.50. This device will quickly cut through either a single sheet or many sheets of paper, and may, for examplet be used to drill holes for fitting CR's Annual Cumulative Bulletin into one of the popular 10-cent-store loose-leaf ring binders. The Kwik-Twst consists of a hollow cutter or bit firmly attached to a hollow transparent plastic handle. The place for the desired hole is marked and the paper to be drilled is placed on a firm surface (never the fingers or palm of the hand). The drill is pushed into the paper with a twisting motion until the bit has gone through the last sheet. Care should be taken to protect the supporting surface as it may easily happen that the cutter will come through unexpectedly and damage a desk or table top. The drilled-out paper cuttings are forced into the hollow plastic handle, which can be emptied into a waste basket, when filled. A celluloid template was provided to locate holes correctly at spacings of 1-3/8 in., 2-1/8 in., 2-3/4 in., 3-1/2 in., and 4-1/4 in.

Consumers' Research, Inc.
Washington, N. J.

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PHONOGRAPH RECORDS

BY WALTER E. GRUENINGER

Please Note: In the ratings AA indicates highly recommended; A, recommended; B, intermediate; C, not recommended.

CONCERTO

Rachmaninoff: *Rhapsody on a Theme of Paganini.* Rubinstein with the Philharmonia Orchestra under Susskind. 6 sides, RCA Victor Set 1269. $4.75. Brilliant, exceedingly difficult variations in concerto form. Rubinstein possesses the strength and facility to challenge the composer's performance in oldish Victor Set 250. Roundly recorded at a high volume level. Performance and recording tops Moiséivitch's in Victor Set 855.
Interpretation AA
Fidelity of Recording A

CHAMBER AND INSTRUMENTAL

Beethoven: *Quartet No. 16.* Paganini Quartet. 6 sides, RCA Victor Set 1253. $4.75. Beethoven's last complete work — a great one. For six years the Budapest-Columbia Set 489 has had the field to itself. Now Paganini's performance appears as a challenge with recording that is fuller, smoother and is pressed on more quiet surfaces. Overall, Paganini.
Interpretation AA
Fidelity of Recording A

Beethoven: *Sonata No. 3.* Fournier (cello), Schnabel (piano). 6 sides, RCA Victor Set 1231. $4.75. Rich, ingratiating work from Beethoven's middle period. Played with character and vigor. Though the recording is well balanced, studio-type, it could stand more bite.
Interpretation AA
Fidelity of Recording A

Beethoven: *Trio No. 4 in D Major* ("Ghost"). Busch-Serkin Trio. 6 sides, Columbia Set 804. $4.75. Among the fine works for violin, cello, piano. Vital performance, first rate team play. But Serkin is outstanding. Recording is excellent.
Interpretation AA
Fidelity of Recording AA

Kabalevsky: *Sonata No. 3.* Horowitz (piano). 4 sides, RCA Victor Set 1282. $3.50. Piquant music likely to wear thin rather soon. Virtuoso performance. Bright recording. Too much surface noise.
Interpretation AA
Fidelity of Recording AA

Mozart: *Sonata No. 12* (K 332) (3 sides) & **Bach-Busoni:** *Nun komm', der Heiden Heiland* (1 side). Horowitz (piano). RCA Victor Set 1284. $3.50. Simple, tender, inspired music. Horowitz plays gracefully, sensitively, yet not effeminately. Clear, close to mike recording.
Interpretation AA
Fidelity of Recording AA

Rachmaninoff: *Sonata in G Minor.* Kurtz (cello), Kapell (piano). 8 sides, RCA Victor Set 1261. $6. Rarely performed, lyric work that has its moments. Balance frequently favors cello. Played with eloquence and strength. Not widest range but good. Annoying surface noise.
Interpretation AA
Fidelity of Recording A

Shostakovich Plays His Own Compositions (piano). 4 sides, Mercury Set 12. $3.92. Seven children's pieces, three fantastic dances, eight preludes, etc., present Shostakovich as composer, pianist, announcer. Recorded in Prague in 1946, pressed here on audible surfaces. Hearty, mite-above-average recording.
Interpretation AA
Fidelity of Recording A

ORCHESTRA

Coates: *London* (3 sides) & *London Again* (3 sides). New Symphony Orchestra under the Composer. London Set 46. $7.35. Two suites suggested by sections of London. Glib, pleasant music such as may end a band or a pops concert. Definitive performance. Wide range, resonant recording.
Interpretation AA
Fidelity of Recording AA

VOCAL

Favorite Operatic Arias. Bjoerling (tenor). 6 sides, RCA Victor Set MO 1275. $4.75. Formerly issued as singles. Thrilling singing. Excellent European recording except for the "Flower Song" (my copy) which sounds blurred.
Interpretation AA
Fidelity of Recording A

Mahler: *Lieder Eines Fahrenden Gesellen.* Zareska (contralto) with the London Philharmonic Orchestra under van Beinum. 4 sides, English Decca Set 71. $5.35. Four sad songs which reveal the style Mahler developed more fully later. Compared with Carol Brice's Columbia Set MX 267 ($3.50), Mme. Zareska sings with greater musicianship though the extraordinary, appropriate quality of Miss Brice's voice has its points. In both cases, orchestral support is first rate and so is the recording, though Decca is smoother. Unfortunately, Decca offers no text. Overall, slight preference for Decca.
Interpretation AA
Fidelity of Recording AA

LIGHT AND MISCELLANEOUS

King Cole at the Piano. 6 sides, Capitol Set C C 135. $3.15. Sparkling nightclub novelties played by Cole supported by guitar and bass.
Interpretation AA
Fidelity of Recording A

Latin Rhythms. Stanley Black and His Concert Orchestra. 6 sides, London Set 53. $3.15. Latin dance music played with bounce, arranged with a few frills. Wide range, resonant-chamber recording.
Interpretation AA
Fidelity of Recording AA

Porter: *Kiss Me Kate.* Members of the Original Broadway Cast. 2 sides, Columbia *Long Playing* Disc ML 4140. $4.85. Cole Porter's latest show is likely to stay around a long time for it offers "Always True to You in My Fashion," "So In Love," "Wunderbar," "Why Can't You Behave," and other sprightly tunes. As in most Broadway musical casts, when it comes to *voices*, they are decidedly uneven. Best is Alfred Drake. Empty theater recording which favors the singers.
Interpretation A
Fidelity of Recording A

Soft Lights and Sweet Music. Morton Gould and His Orchestra. 8 sides, Columbia Set 765. $4.90. Captivating arrangements of "Goodnight Sweetheart," "I'm in the Mood for Love," "You and the Night and the Music," etc. Wide range recording, luminous performance. **Interpretation AA**
Fidelity of Recording AA

RECOMMENDED SINGLE DISCS

COLUMBIA: Philadelphia Orchestra C 12928 — Pons C 72752 — Szigeti C 72734 — Pinza C 72751 and on Microgroove: Philharmonic-Symphony Orchestra of N.Y. C 3-101 and C 3-117 — Francescatti C 3-114 — Welitsch C 3-102. VICTOR: Berger V 12-0692 — Svanholm V 12-0691 — Quartararo and Vinay V 12-0687 — Bernac and Poulenc V 12-0426 — Anderson V 12-0734 — Albanese V 12-0733.